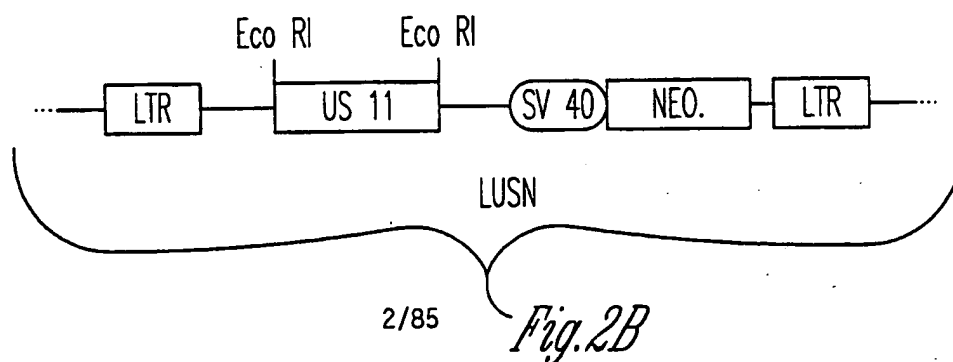
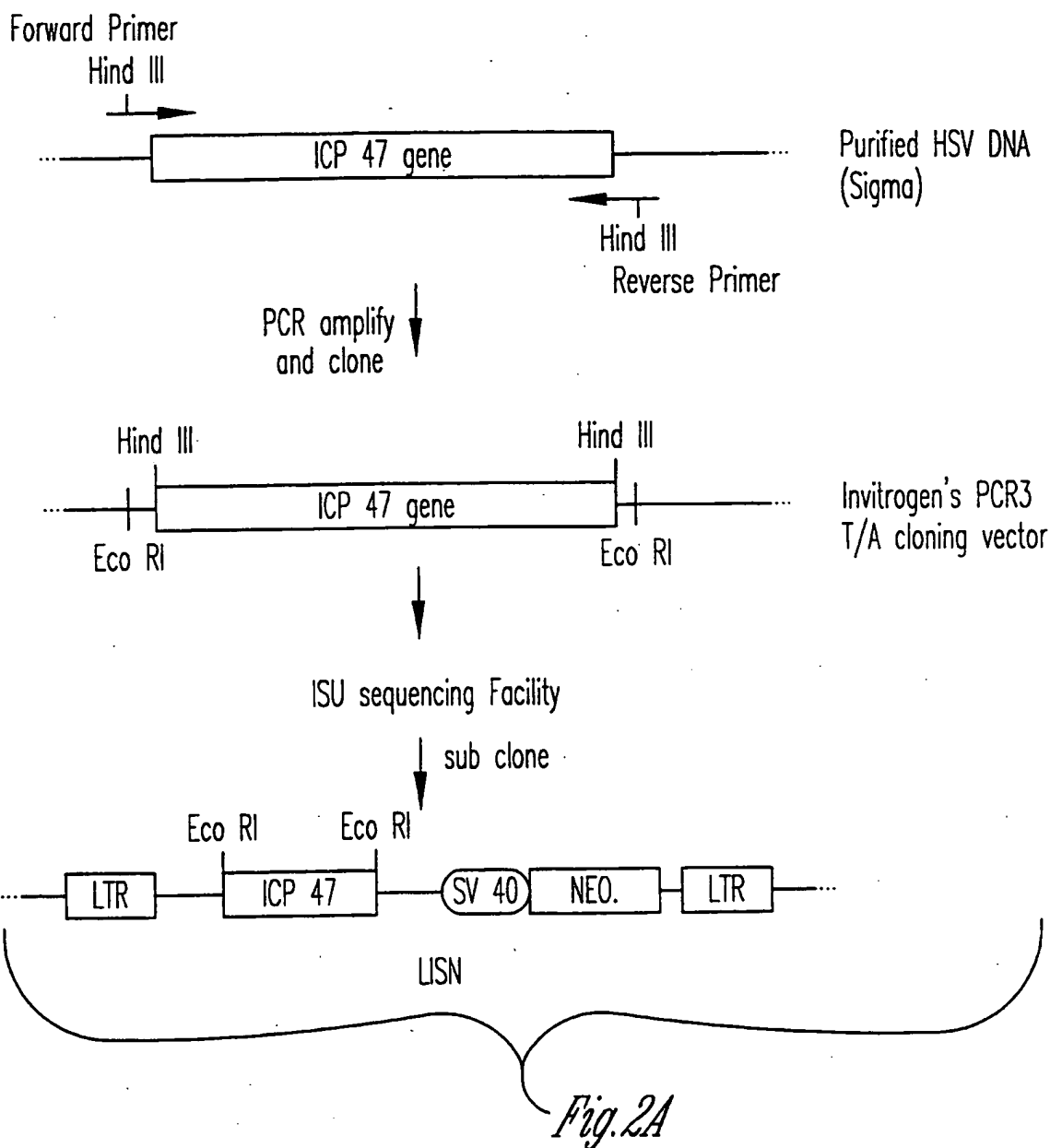


Fig. 1



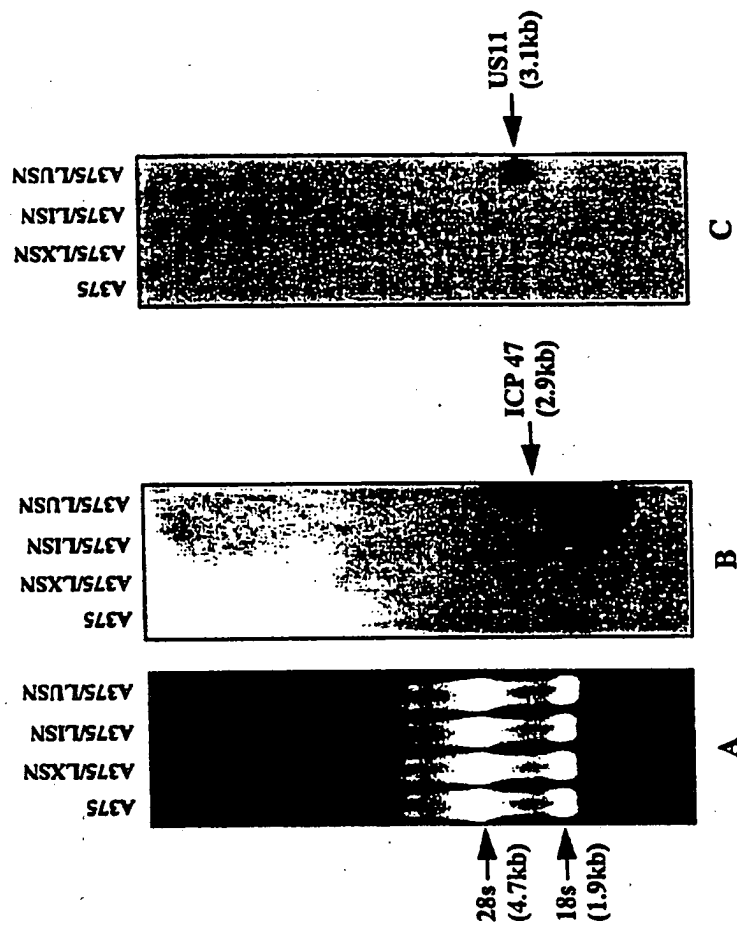
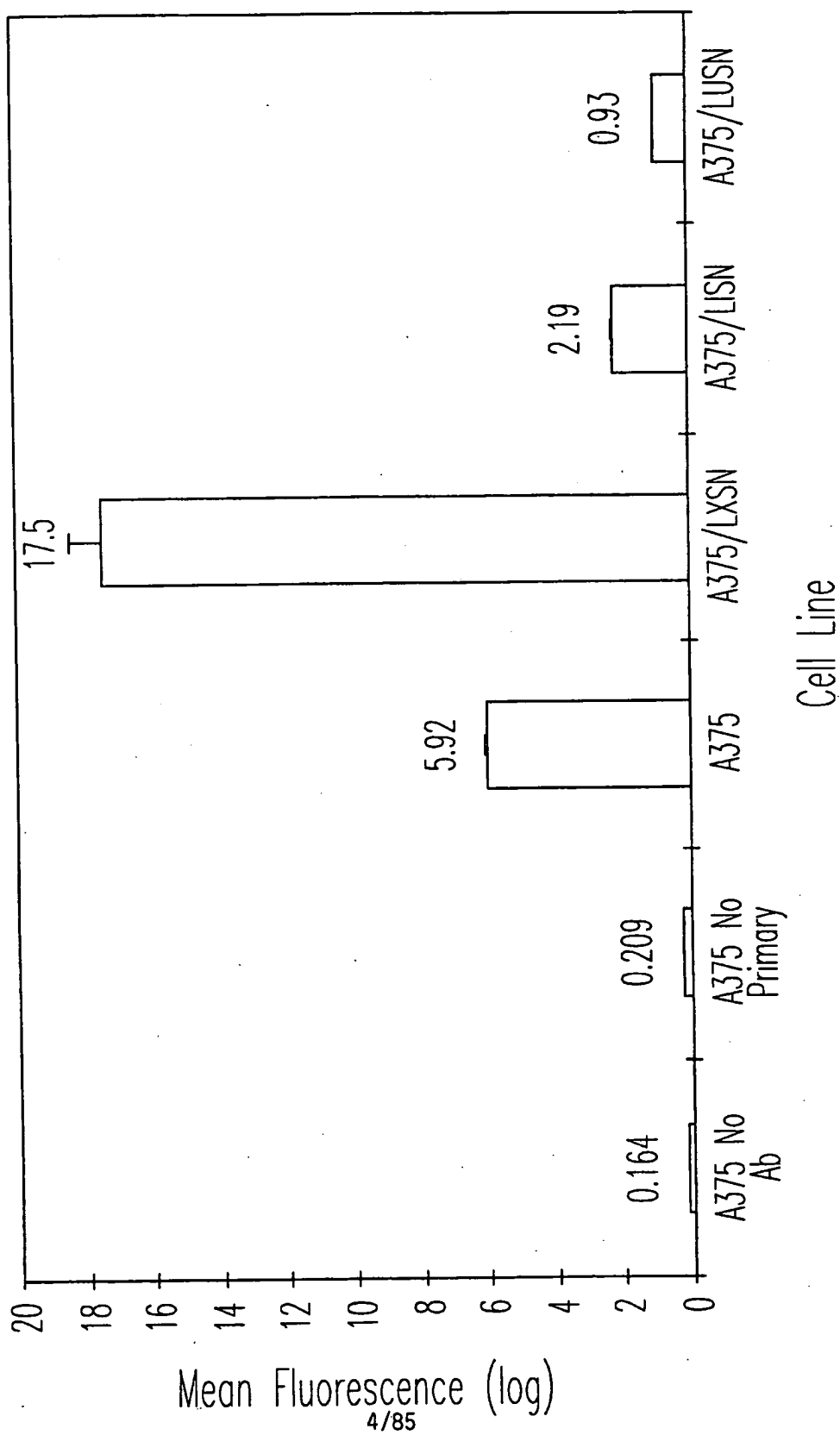


Fig. 3



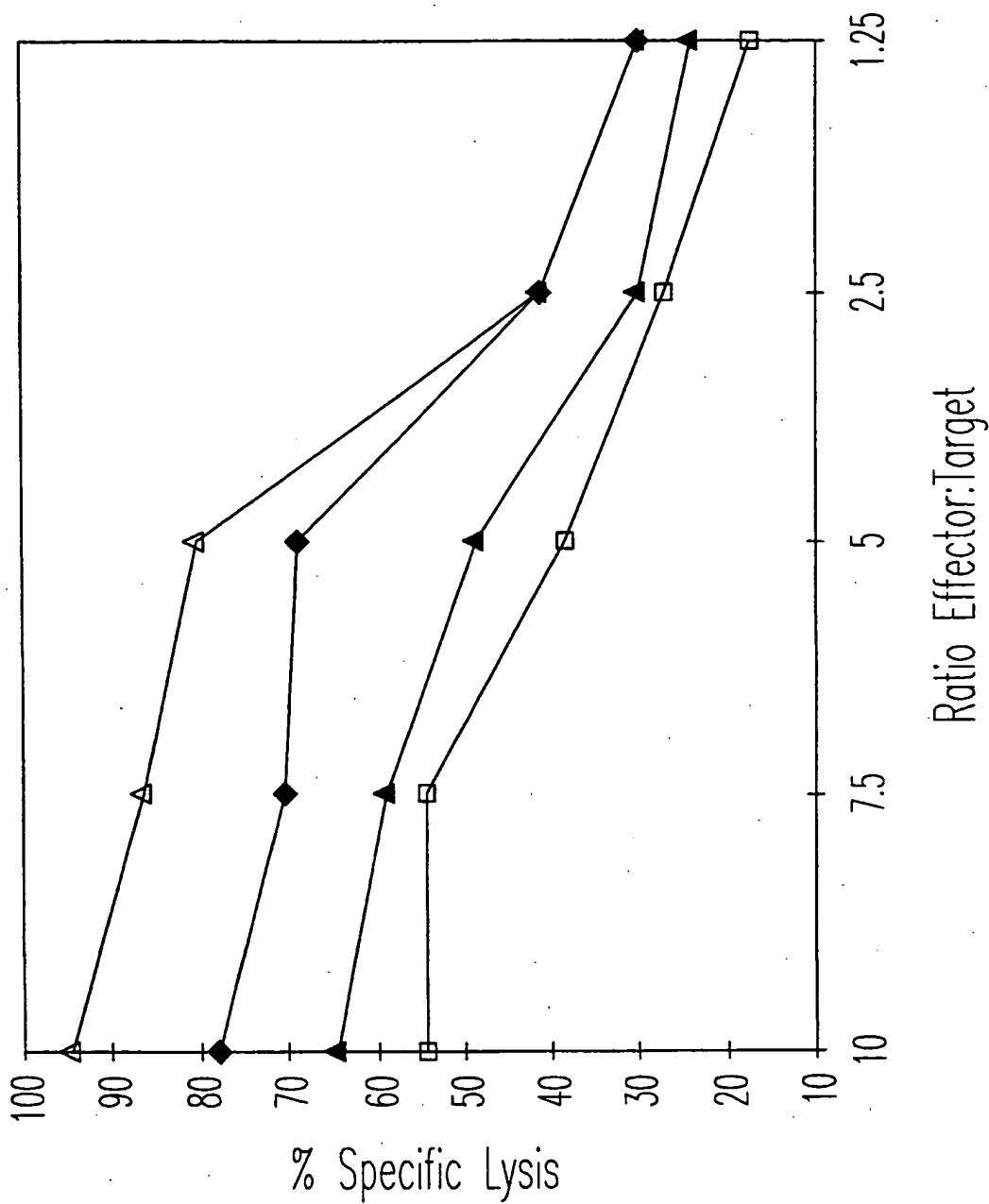
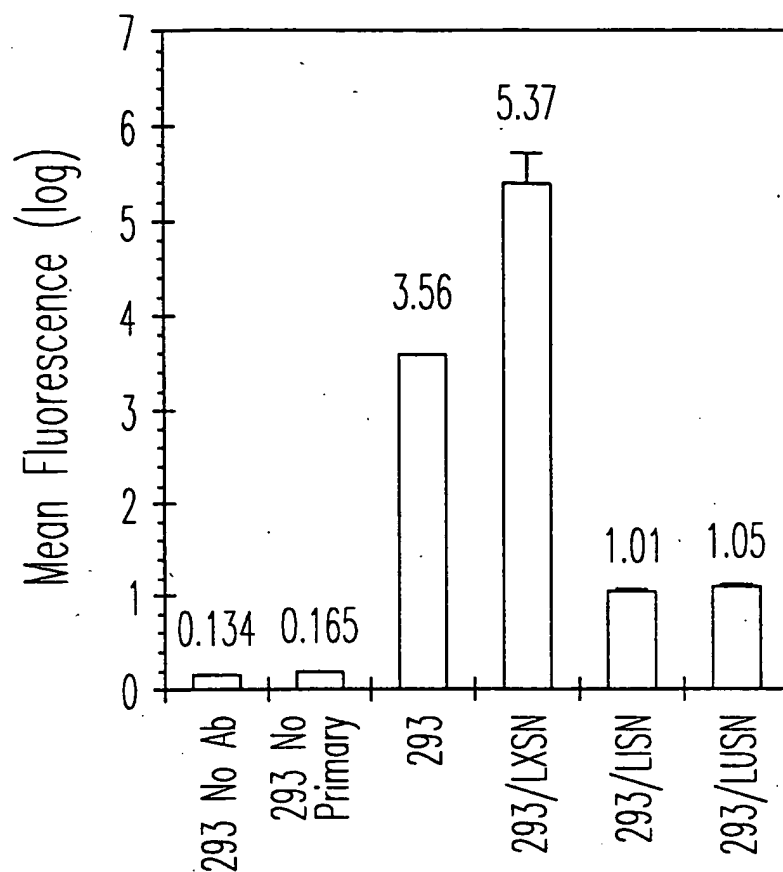
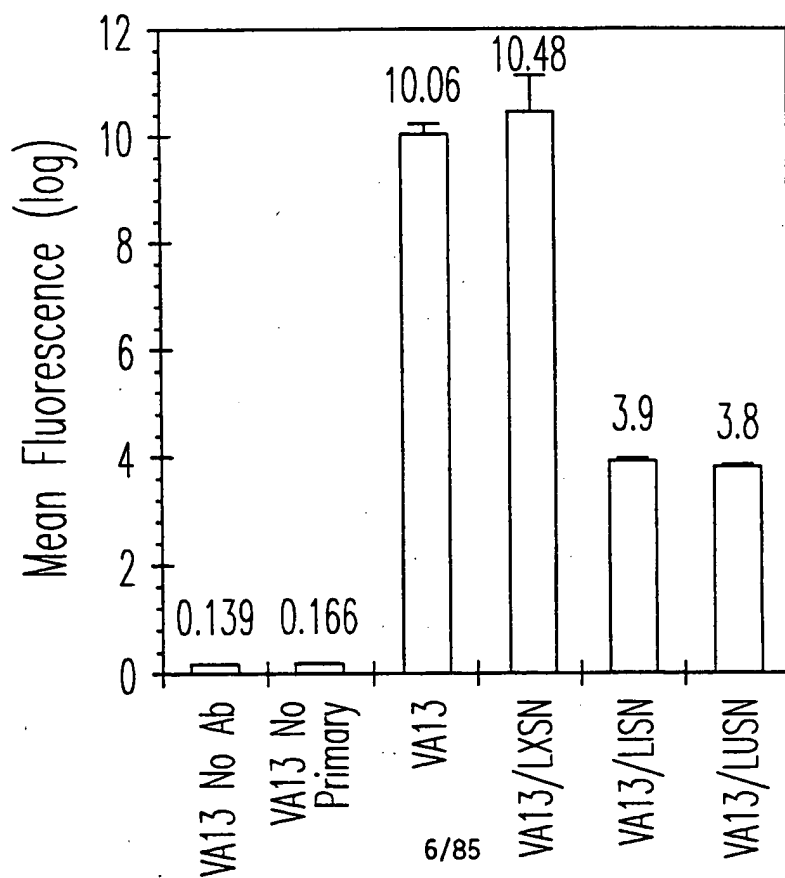
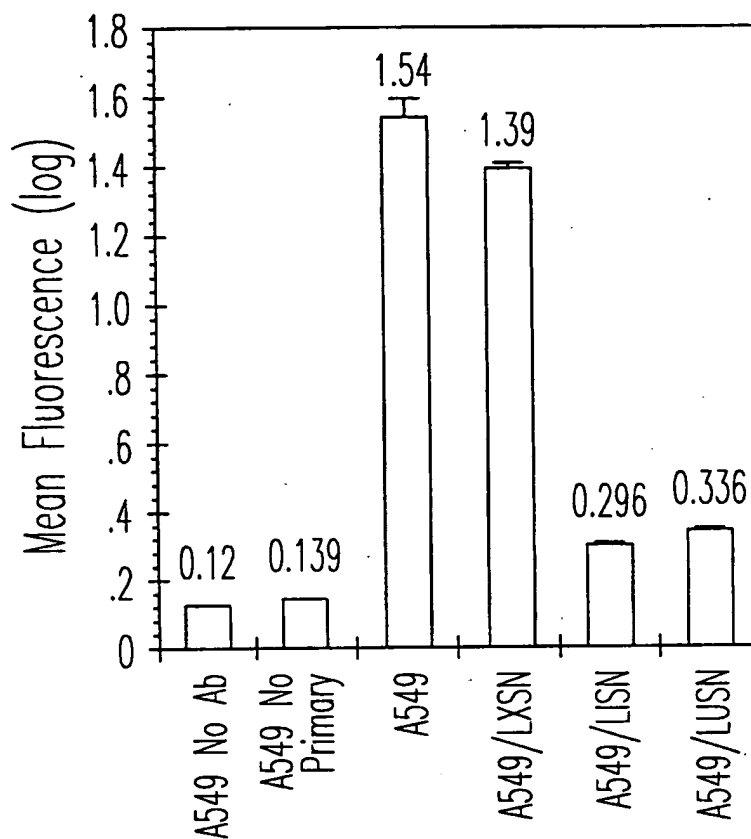
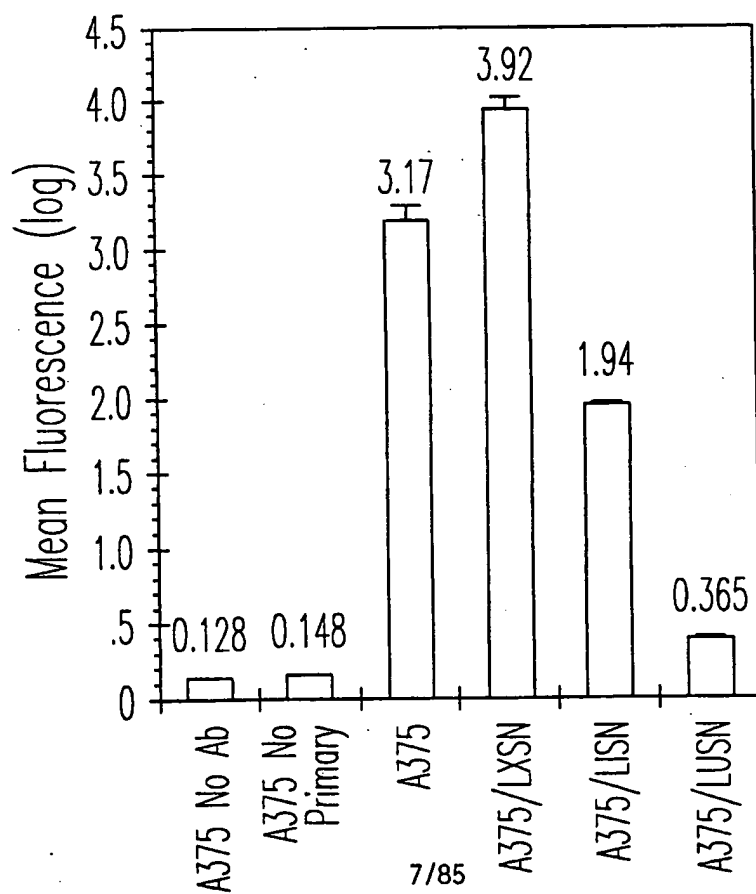


Fig. 5

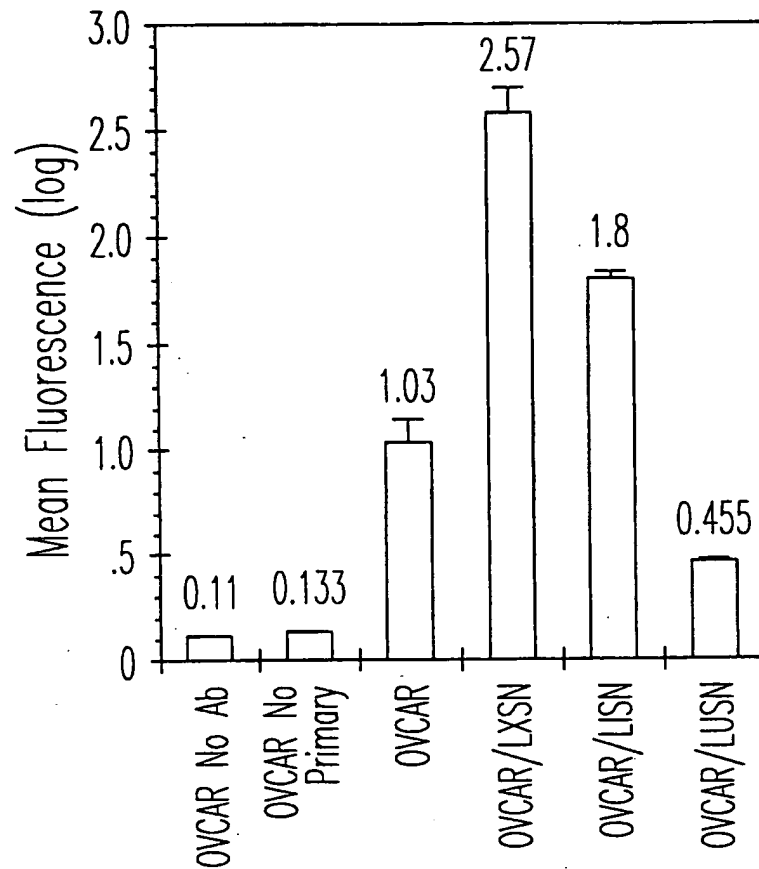
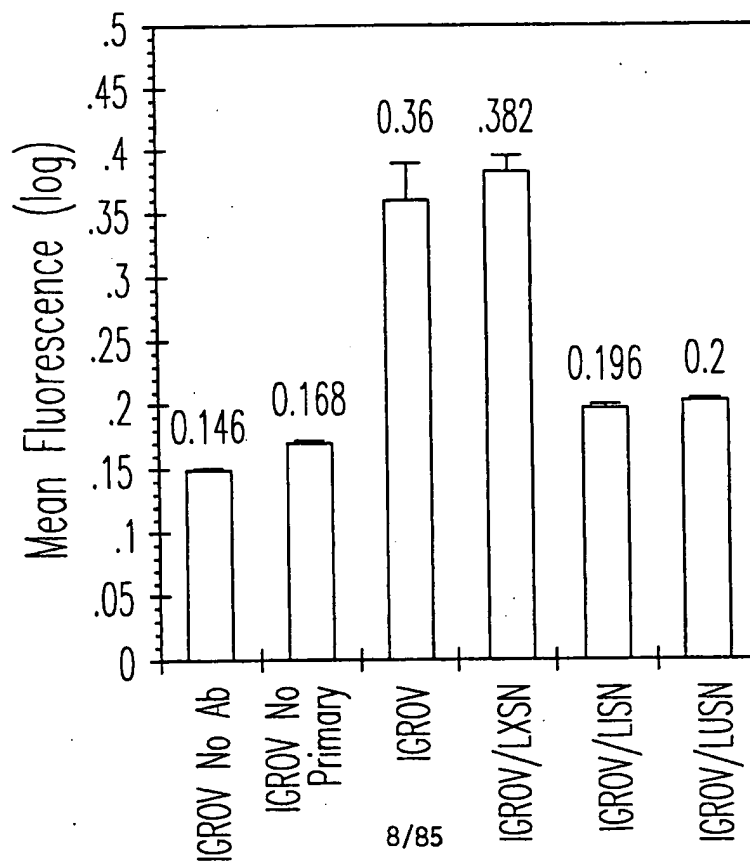
- ◆— A375
- △— A375/LXSN
- ▲— A375/LISN
- A375/LUSN

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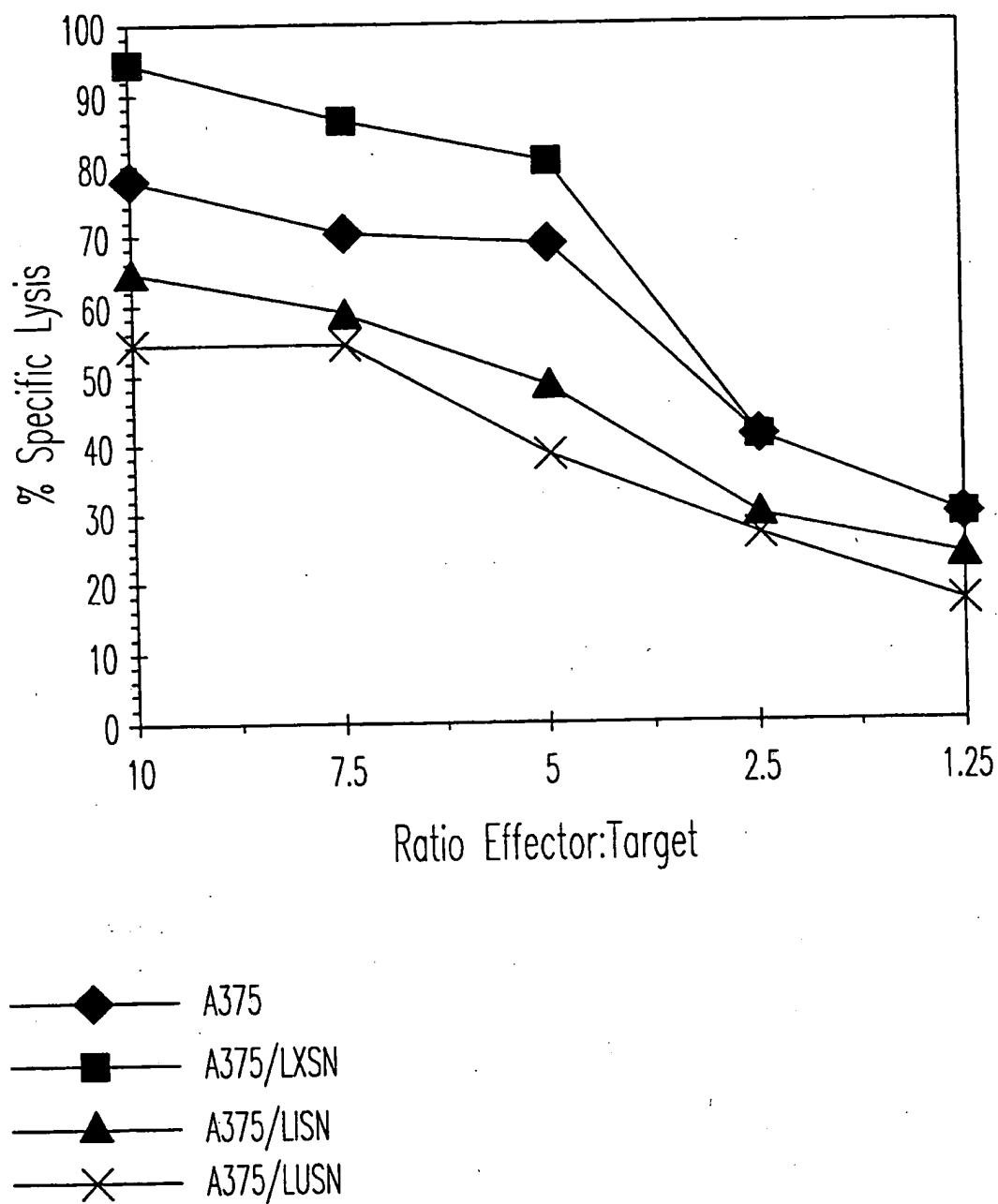
*Fig. 6A**Fig. 6B*

*Fig. 6C**Fig. 6D*

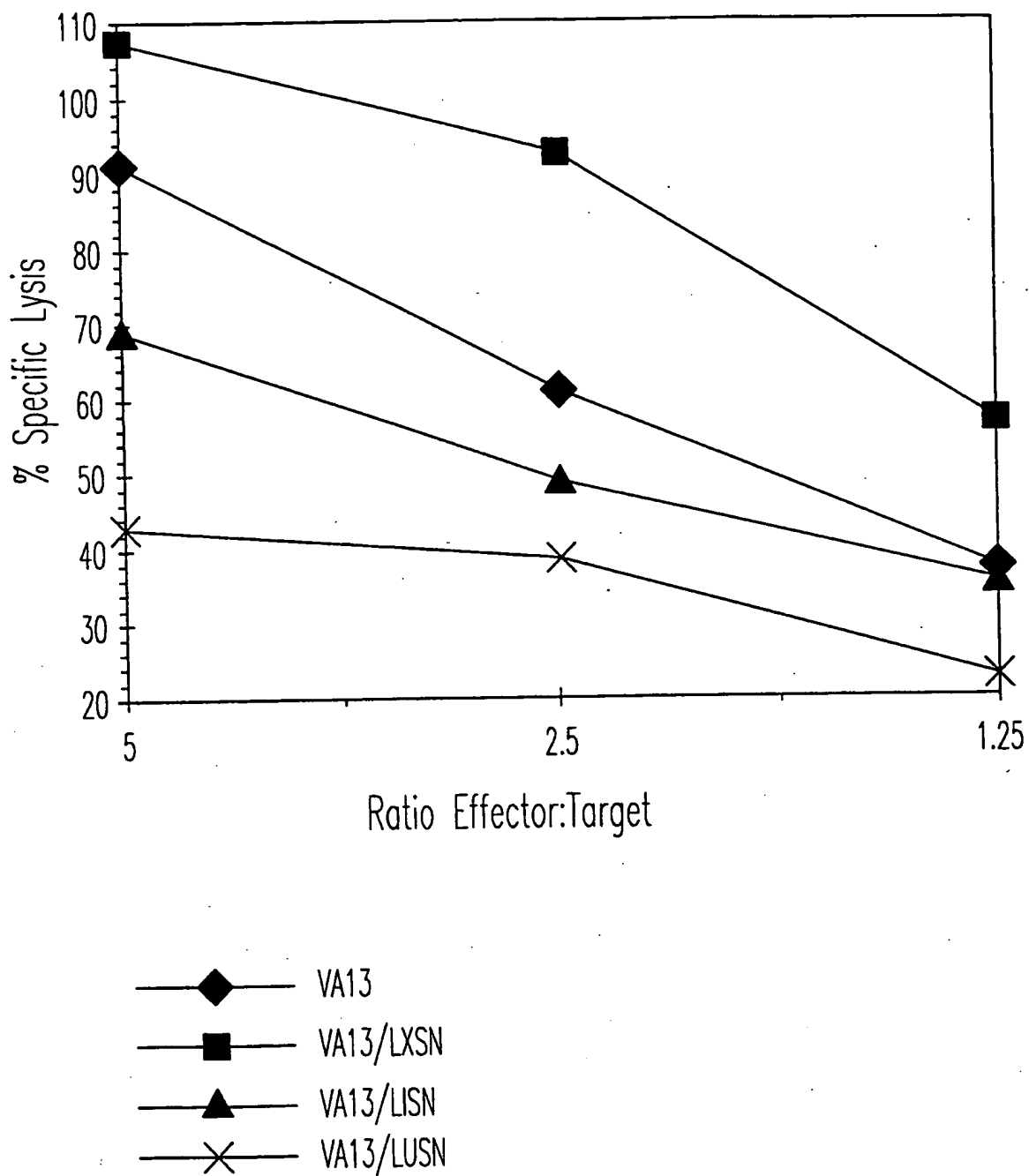
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*Fig. 6E**Fig. 6F*



*Fig. 7A*

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*Fig. 7B*

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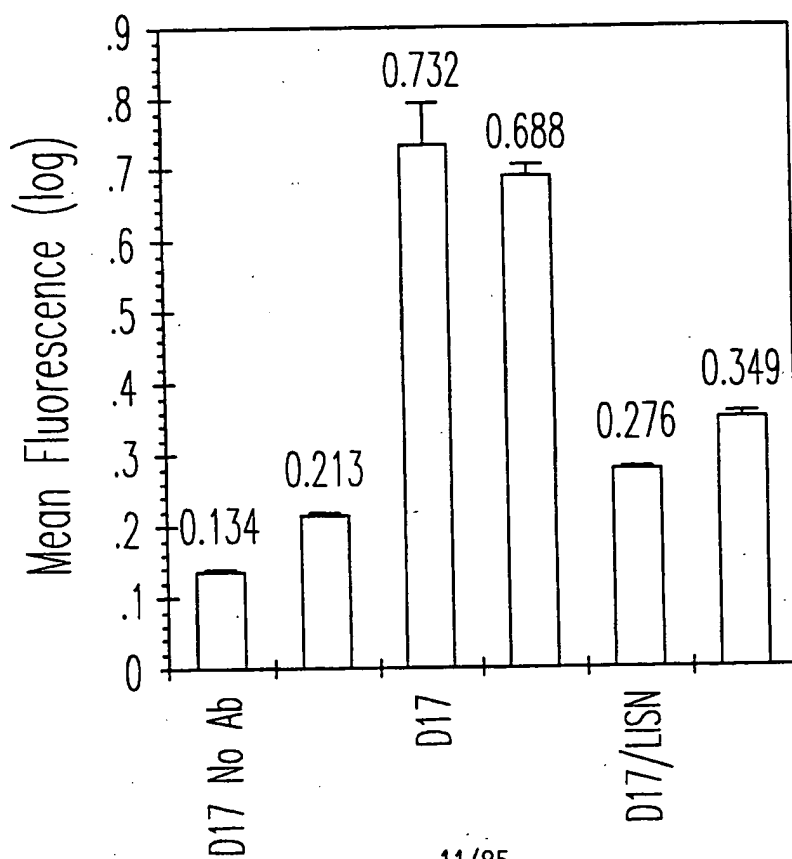
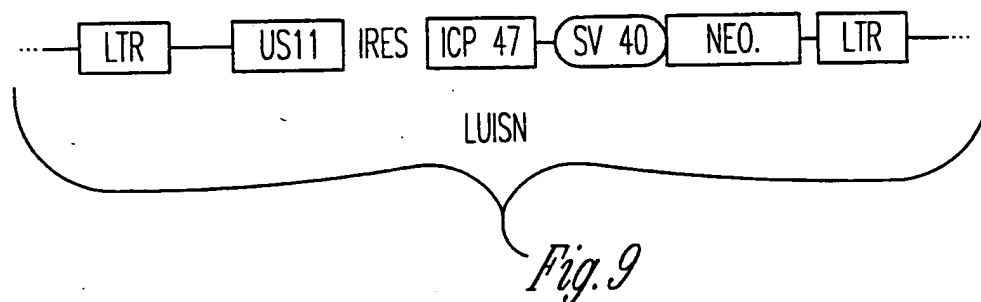
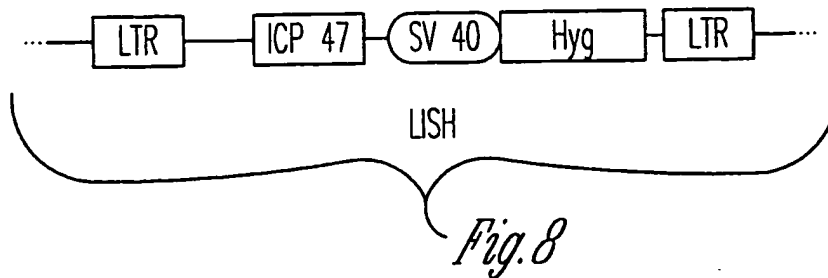
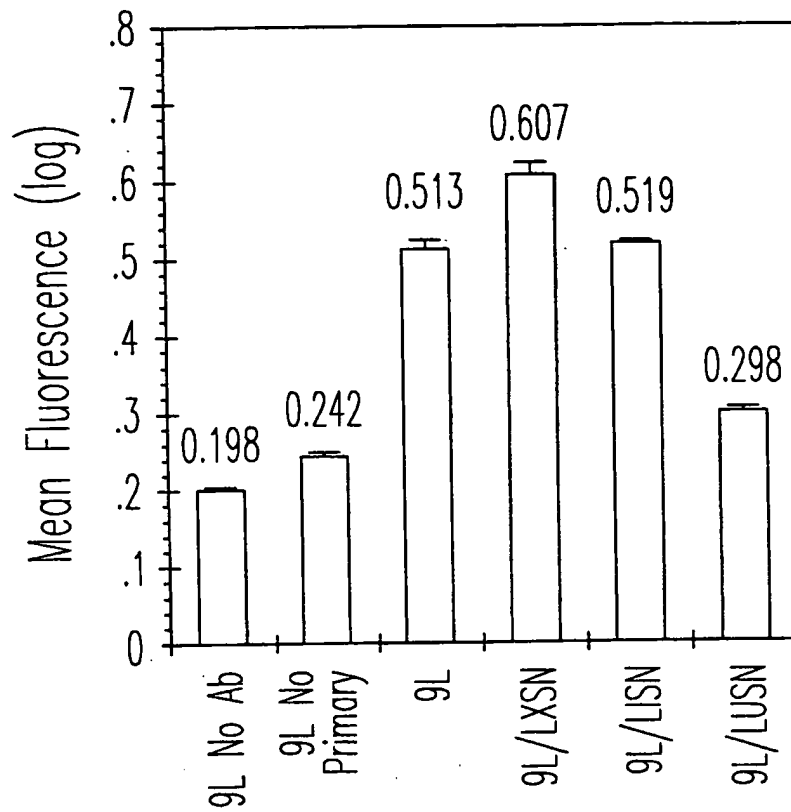
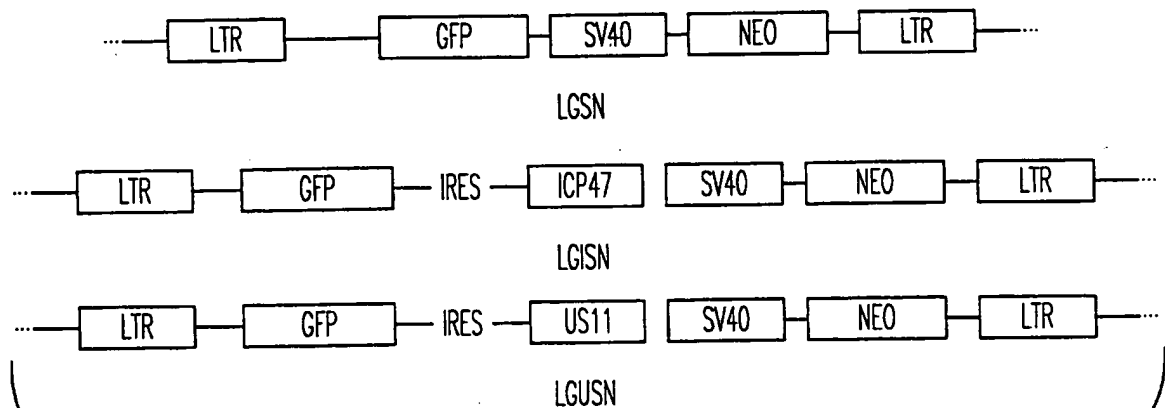
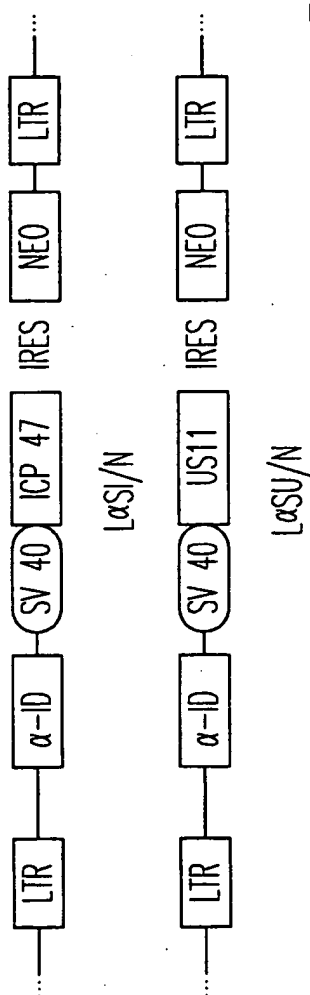


Fig. 10A

*Fig. 10B**Fig. 11*

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*Fig. 12*

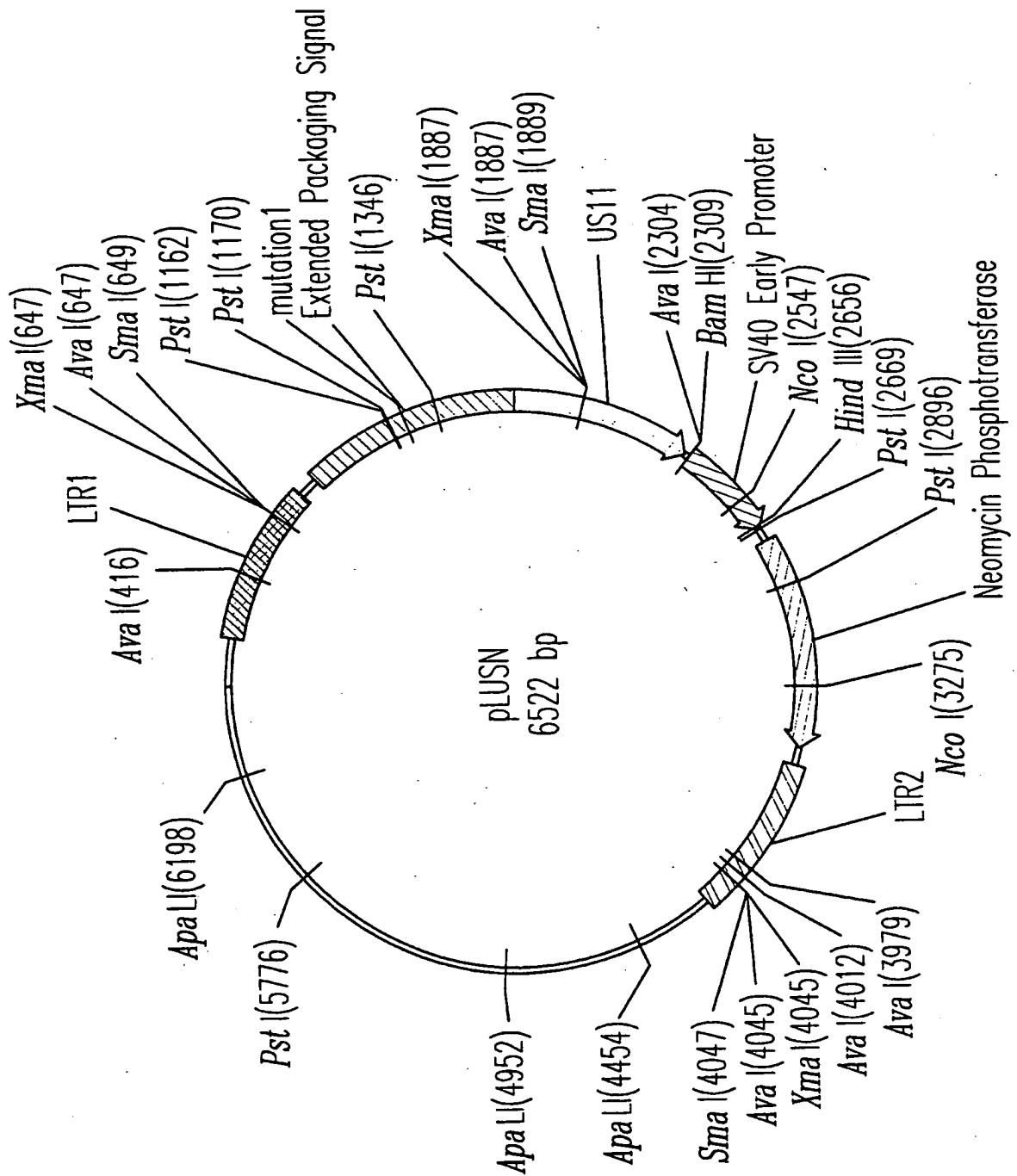


Fig. 13

```

1  GAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTCATAC CAGATCACCG
   CTTAACGATC GTTAACGATC GTTAACGATC GTTAAGTATG GTCTAGTGGC
-----
51  AAAACTGTCC TCCAAATGTG TCCCCCTCAC ACTCCCAAAT TCGCGGGCTT
   TTTTGACAGG AGGTTTACAC AGGGGAGTG TGAGGGTTTA AGCGCCCGAA
-----
101 CTGCCTCTTA GACCACTCTA CCTATTCCC CACACTCACC GGAGCCAAAG
   GACGGAGAAT CTGGTGAGAT GGGATAAGG GTGTGAGTGG CCTCGGTTTC
-----
151 CCGCGGCCCT TCCGTTTCTT TGCTTTTGAA AGACCCACC CGTAGGTGGC
   GCGCGCGGGA AGGCAAAGAA ACGAAAACCT TCTGGGGTGG GCATCCACCG
-----
201 AAGCTAGCTT AAGTAACGCC ACTTIGCAAG GCATGGAAA ATACATAACT
   TTCGATCGAA TTCATTGCGG TGAACGTTT CGTACCCTTT TATGTATTGA
-----
251 GAGAAATAGAA AAGTTCAGAT CAAGTCCAGG AACAAAGAAA CAGCTGAATA
   CTCCTTATCTT TTCAAGTCTA GTTCCAGTCC TTGTTTCTTT GTCGACTTAT
-----
301 CCAACACAGG TATCTGTGGT AAGCGTTCC TGCCCCGGCT CAGGGCCAAG
   GGTTTGTCCT ATAGACACCA TTCGCCAAGG ACGGGCCGA GTCCCGGTTT
-----
351 AACAGATGAG ACAGCTGAGT GATGGCCAA ACAGGATATC TGTGGTAAGC
   TTGTCTACTC TGTCGACTCA CTACCCGGTT TGTCCCTATAG ACACCATTCG
-----
-----
Aval
-----
401 AGTTCCTGCC CCGGCTCGGG GCCAAGAACA GATGGTCCCC AGATGCGGTC
   TCAAGGACGG GCGCGAGCCC CGGTTCTTGT CTACCAGGGG TCTACGCCAG

```

Fig. 14-1

```

451 CAGCCCTCAG CAGTTTCTAG TGAATCATCA GATGTTTCCA GGGTGCCCCA
    GTCGGGAGTC GTCAAAGATC ACTTAGTAGT CTACAAAGGT CCCACGGGGT
-----
501 AGGACCTGAA AATGACCCTG TACCTTAATT GAACTAACCA ATCAGTTCCG
    TCCTGGACTT TTA CTGGGAC ATGGAATAAA CTTGATTGGT TAGTCAAGCG
-----
551 TTCTCGCTTC TGTTCCGCGG CTTCGGCTCT CCGAGCTCAA TAAAGAGCC
    AAGAGCGAAG ACAAGCGCGC GAAGGCGAGA GGCTCGAGTT ATTTTCTCGG
-----
                                     XmaI
                                     ~~~~
                                     SmaI
                                     ~~~~
                                     Aval
                                     ~~~~
601 CACAACCCCT CACTCGGCGC GCCAGTCTTC CGATAGACTG CGTCGCCCGG
    GTGTTGGGGA GTGAGCCCGC CGGTCAGAA GCTATCTGAC GCAGCGGGCC
-----
                                     XmaI
                                     ~
                                     SmaI
                                     ~
                                     Aval
                                     ~
651 GTACCCGTAT TCCCAATAAA GCCTCTTGCT GTTGCATCC GAATCGTGGT
    CATGGGCATA AGGTTTATTT CCGAGAACGA CAAACGTAGG CTTAGCACCA
-----
701 CTCGCTGTTT CTGCGGAGGG TCTCCTCTGA GTGATTGACT ACCCAGGACG
    GAGCGACAAG GAACCTCTCC AGAGGAGACT CACTAACTGA TGGGTGCTGC
-----

```

Fig. 14-2



```

751  GGGGTCTTTC ATTTGGGGG TCGTCCGGG TTTGGAGACC CCTGCCCAGG
      CCCAGAAAG TAAACCCCG AGCAGGCCCT AACCTCTGG GGACGGGTCC
-----
801  GACCACCGAC CCACCACCG GAGGTAAGCT GGCCAGCAAC TTATCTGTGT
      CTGGTGGCTG GGTGGTGCC CTCCAATCGA CCGGTCGTTG AATAGACACA
-----
851  CTGTCCGATT GTCTAGTGT TATGTTTGT GTTATGCGCC TGCCTCTGTA
      GACAGGCTAA CAGATCACAG ATACAAACTA CAATACGCGG ACGCAGACAT
-----
901  CTAGTTAGCT AACTAGTCT GTATCTGGG GACCCGTGGT GGAACGTACG
      GATCAATCGA TTGATCGAGA CATAGACCGC CTGGGCACCA CCTTGACTGC
-----
951  AGTCTGAAC ACCCGCCGC GTATCTGGG GACGTCCCAG GGACTTTGGG
      TCAAGACTTG TGGCCGGCG TTGGGACCT CTGCAGGGTC CCTGAAACCC
-----
1001 GGCCGTTTT GTGGCCCGAC CTGAGGAAG GAGTCGATGT GGAATCCGAC
      CCGCAAAA CACCGGGCTG GACTCCTTCC CTCAGCTACA CCTTAGGCTG
-----
1051 CCCGTCAGGA TATGTGGTC TGGTAGGAGA CGAGAACCTA AAACAGTTCC
      GGCAGTCCT ATACACCAAG ACCATCCTCT GCTCTTGGAT TTTGTCAAGG
-----
1101 CGCCTCCGTC TGAATTTTG CTTTCGGTTT GGAACCGAAG CCGCGCGTCT
      GCGGAGGCAG ACTTAAAAAC GAAAGCCAAA CCTTGGCTTC GGCGCGCAGA
-----
      PstI      PstI
-----
1151 TGTCTGCTGC AGCGCTGCAG CATCGTTCTG TGTTGTCTCT GTCTGACTGT
      ACAGACGACG TCGCGACGTC GTAGCAAGAC ACAACAGAGA CAGACTGACA
-----

```

Fig. 14-3

1201 GTTTCIGTAT TTGTCTGAAA ATTAGGGCCA GACTGTTACC ACTCCCTTAA  
CAAAGACATA AACAGACTTT TAATCCCGGT CTGACAATGG TGAGGGAATT  
-----  
1251 GTTTGACCTT AGGTCAC TGG AAGATGTCG AGCGGATCGC TCACAACCCAG  
CAAAC TGGAA TCCAGTGACC TTTCTACAGC TCGCCTAGCG AGTGTGGTC  
-----  
PstI  
-----  
1301 TCGGTAGATG TCAAGAAGAG ACGTTGGGT ACCTTCTGCT CTGCAGAATG  
AGCCATCTAC AGTTCTTCTC TGCAACCCAA TGGAAGACGA GACGTCTTAC  
-----  
1351 GCCAACCTTT AACGTGGAT GGCCGGGAGA CGGCACCTTT AACCGAGACC  
CGGTTGGAAA TTGCAGCCTA CCGGCGCTCT GCCGTGAAA TTGGCTCTGG  
-----  
1401 TCATCACCCA GGTTAAGATC AAGTCTTTT CACCTGGCCC GCATGGACAC  
AGTAGTGGGT CCAATTCTAG TTCCAGAAAA GTGGACCGGG CGTACCTGTG  
-----  
1451 CCAGACCAGG TCCCCTACAT CGTGACCTGG GAAGCCTTGG CTTTTGACCC  
GGTCTGGTCC AGGGGATGA GCACTGGACC CTTCGGAACC GAAAACCTGGG  
-----  
1501 CCCTCCCTGG GTCAAGCCCT TTGTACACCC TAAGCCTCCG CCTCCTCTTC  
GGGAGGGACC CAGTTCGGGA AACATGTGGG ATTGGAGGC GGAGGAGAAG  
-----  
1551 CTCCATCCGC CCGTCTCTC CCCCTTGAAC CTCCTCGTTC GACCCCGCCT  
GAGGTAGGCG GGGCAGAGAG GGGGAACCTG GAGGAGCAAG CTGGGGCGGA  
-----  
1601 CGATCCTCCC TTTATCCAGC CCTCACTCCT TCTCTAGGCG CCGGATGAAC  
GCTAGGAGGG AAATAGGTCG GGAGTGAGGA AGATCCCG GGCCTACTTG  
-----

Fig. 14-4

1651 CTGTGTAATGC TTATTCTAGC CCTCTGGGCC CCGTCCGGG GTAGTATGCC  
GAACATTACG AATAAGATCG GGAGACCCGG GGCCAGCGCC CATCATACGG

1701 TGAATTATCC TTGACTCTTT TCGATGAACC TCCGCCCTTG GTGGAGACGG  
ACTTAATAGG AACTGAGAA AGCTACTTGG AGGCGGAAC CACCTCTGCC

1751 AGCCGTTACC GCCTCTGTCC GATGTTTCGG AGTACCGAGT AGAGTATTCC  
TCGGCAATGG CGGAGACAGG CTACAAAGCC TCATGGCTCA TCTCATAAGG

1801 GAGGCGGCT GCGTGCTCCG ATCGGCGGT CGACTGGAGG CTCTGTGGAC  
CTCCGGCGGA CGCAGGAGC TAGCCCGCCA GTGACCTCC GAGACACCTG

XmaI

~~~~~

SmaI

~~~~~

AvaI

~~~~~

1851 CCTGCGCGGG AACCTGTCCG TGCCACAGCC GACACCCCG GTGTACTACC  
GGACGCGCCC TTGGACAGGC ACGGTGCGG CTGTGGGGCC CACATGATGG

1901 AGACGCTGGA GGGCTACGG GATCGAGTGC CGACGCCGGT GGAGGACGTC  
TCTGCGACCT CCCGATGCGC CTAGCTCAGG GCTGCGGCCA CCTCCTGCAG

1951 TCCGAAAGCC TCGTCGCAA ACGTACTGG CTCGGGACT ATCGTGTTC  
AGGCTTTCGG AGCAGCGTTT TCGGATGACC GAGGCCCTGA TAGCACAAGG

2001 CCAACGCACA AAACCTCGTG TGTCTACTT TTCCCCCTGC CACCAATGCC  
GGTTGCGTGT TTTGAGCACA ACAAGATGAA AAGGGGACG GTGGTTACGG

2051 AAAC TTATTA TGTAGATGC GAACCCCGGT GCCTCGTGCC TTGGGTTCCC  
TTTGAATAAT ACATCTCAGG CTTGGGGCCA CGGAGCACGG AACCCAAGGG  
-----  
2101 CTGTGGAGCT CGTTAGAGGA CATCGAACGA CTATTGTTCC AGATCGCCG  
GACACCTCGA GCAATCTCCT GTAGCTTGCT GATAACAAGC TTCTAGCCGC  
-----  
2151 TCTAATGGCG TACTACGCGC TCACGATTAA GTCGGCGCAG TATACGCTGA  
AGATTACCGC ATGATGCGCG AGTGCTAATT CAGCCGCGTC ATATGCGACT  
-----  
2201 TGATGGTGGC AGTGATTCAA GTGTTTGGG GGC TGTATGT GAAAGGTTGG  
ACTACCACCG TCACTAAGTT CACAAAACCC CCGACATACA CTTTCCAACC  
-----  
2251 CTGCACCGAC ATTTTCCCTG GATGTTTTCG GACCAGTGGT GAAATTCGTT  
GACGTGGCTG TAAAGGGAC CTACAAAAGC CTGGTCACCA CTTTAAGCAA  
-----  
-----  
BamHI  
-----  
Aval  
-----  
2301 AACTCGAGGA TCCGGCTGTG GAATGTGTGT CAGTTAGGGT GTGGAAGTC  
TTGAGCTCCT AGGCCGACAC CTTACACACA GTCAATCCCA CACCTTTCAG  
-----  
2351 CCCAGGCTCC CCAGCAGGCA GAAGTATGCA AAGCATGCAT CTC AATTAGT  
GGGTCCGAGG GGTCTGTCCT CTTTCATACGT TTCGTACGTA GAGTTAATCA  
-----  
2401 CAGCAACCAG GTGTGGAAG TCCCCAGGCT CCCCAGCAGG CAGAAGTATG  
GTCGTTGGTC CACACCTTTC AGGGGTCCGA GGGGTCTGCC GTCTTCATAC  
-----

Fig. 14-6

```

2451  CAAAGCATGC ATCTCAATTA GTCAGCAACC ATAGTCCCGC CCCTAACTCC
      GTTTCGTACG TAGAGTTAAT CAGTCGTGG TATCAGGGCG GGGATTGAGG
      -----
      NcoI
      ~~~~~
2501  GCCCATCCCG CCCCTAACTC CGCCAGATTC CGCCCATTTCT CCGCCCCCATG
      CGGGTAGGGC GGGGATTGAG GCGGGTCAAG GCGGTAAGA GCGGGGGTAC
      -----
      NcoI
      ~~~~~
2551  GCTGACTAAT TTTTITTATT TATGAGAGG CCGAGGCCGC CTCGGCCTCT
      CGACTGATTA AAAAAATAA ATACGCTCTC GGCTCCGGCG GAGCCGGAGA
      -----
2601  GAGCTATTC AGAAGTAGTG AGGAGGTTT TTTGGAGGCC TAGGCTTTTG
      CTCGATAAGG TCTTCATCAC TCCTCCGAAA AAACCTCCG ATCCGAAAAAC
      -----
      HindIII  PstI
      ~~~~~
2651  CAAAAGCTT GGGCTGCAGG TCGAGGCGGA TCTGATCAAG AGACAGGATG
      GTTTTTCGAA CCCGACGTCC AGCTCCGCCT AGACTAGTTC TCTGTCTTAC
      -----
2701  AGGATCGTT CGCATGATTG AACAAAGATG ATTGCACGCA GGTCTCCGG
      TCCTAGCAAA GCGTACTAAC TTGTTCTACC TAACGTGCGT CCAAGAGGCC
      -----
2751  CCGCTTGGGT GGAGAGGCTA TTCGGCTATG ACTGGGCACA ACAGACAATC
      GGCGAACCCA CCTCTCCGAT AAGCCGATAC TGACCCGTGT TGTCTGTTAG
      -----
2801  GGCTGCTCTG ATGCCGCCGT GTTCCGGCTG TCAGGCGCAG GCGGCCCGGT
      CCGACGAGAC TACGGCGGCA CAAGGCCGAC AGTCGCGTCC CCGCGGGCCA
      -----

```

Fig. 14-7

PstI

2851 TCTTTTGTG AAGACCGACC TGTCGGGTGC CCTGAATGAA CTGCAGGACG  
AGAAAAACAG TTCTGGCTGG ACAGGCCACG GGACTTACTT GACGTCTCTGC  
-----  
2901 AGGCAGCGG GCTATCGTGG CTGGCCACGA CGGGCGTTCC TTGGCGCAGCT  
TCCGTCGCGC CGATAGCACC GACCGGTGCT GCCCGCAAGG AACCGTCTGA  
-----  
2951 GTGCTCGACG TTGTCACTGA AGCGGGAAGG GACTGGGTGC TATTGGGCGA  
CACGAGCTGC AACAGTGACT TCGCCCTTCC CTGACCGACG ATAAACCCGCT  
-----  
3001 AGTGCCGGG CAGGATCTCC TGTCACTCA CCTTGCTCCT GCCGAGAAAG  
TCACGGCCCC GTCCTAGAGG ACAGTAGAGT GGAACGAGGA CGGCTCTTTC  
-----  
3051 TATCCATCAT GGCTGATGCA ATGCGGCGGC TGCATACGCT TGATCCGGCT  
ATAGGTAGTA CCGACTACGT TACGCCGCCG ACGTATGCGA ACTAGGCCGA  
-----  
3101 ACCTGCCCAT TCGACCCACCA AGCGAAACAT CGCATCGAGC GAGCACGTAC  
TGGACGGGTA AGCTGGTGGT TCGCTTTGTA GCGTAGCTCG CTCGTGCATG  
-----  
3151 TCGGATGGAA GCCGGTCTTG TCGATCAGGA TGATCTGGAC GAAGAGCATC  
AGCCTACCTT CGGCCAGAAC AGCTAGTCCT ACTAGACCTG CTTCTCGTAG  
-----  
3201 AGGGGCTCGC GCCAGCCGAA CTGTTCCGCA GGCTCAAGGC GCGCATGCCC  
TCCCCGAGCG CGGTCGGCTT GACAAGCGGT CCGAGTTCCG CGCGTACGGG  
-----

Fig. 14-8

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## NcoI

```

3251 GACGGCGAGG ATCTCGTCGT GACCCATGGC GATGCCTGCT TGCCGAATAT
      CTGCCGCTCC TAGAGCAGCA CTGGGTACCG CTACGGACGA ACGGCTTATA
-----
3301 CATGGTGGAA AATGGCCGCT TTTCTGGATT CATCGACTGT GGCCGGCTGG
      GTACCACTT TTACCGGCGA AAAGACCTAA GTAGCTGACA CCGGCCGACC
-----
3351 GTGTGGCGGA CCGCTATCAG GACATAGCGT TGGCTACCCG TGATATTGCT
      CACACCGCCT GCGGATAGTC CTGTATCGCA ACCGATGGC ACTATAACGA
-----
3401 GAAGAGCTTG GCGGCGAATG GGCTGACCGC TTCCTCGTGC TTACCGGTAT
      CTTCCTCGAAC CGCCGCTTAC CCGACTGGCG AAGGAGCAGG AAATGCCATA
-----
3451 CGCCGCTCCC GATTGCGAGC GCATCGCCTT CTATCGCCTT CTTGACGAGT
      GCGGCGAGGG CTAAGCGTCG CGTAGCGGAA GATAGCGGAA GAACTGCTCA
-----
3501 TCTTCTGAGC GGGACTCTGG GGTTGATAA AATAAAGAT TTTATTTAGT
      AGAAGACTCG CCTGAGACC CCAAGCTATT TTATTTTCTA AAATAAATCA
-----
3551 CTCAGAAAAA AGGGGGGAAT GAAAGACCC ACCTGTAGGT TTGGCAAGCT
      GAGGTCTTTT TCCCCCCTTA CTTTCTGGG TGGACATCCA AACCCTTCCA
-----
3601 AGCTTAAGTA ACGCCATTTT GCAAGGCAATG GAAAAATACA TAACTGAGAA
      TCGAATTTCAT TGCGGTAAAA CGTTCCGTAC CTTTTTATGT ATTGACTCTT
-----
3651 TAGAGAAAGTT CAGATCAAGG TCAGGAACAG ATGGAACAGC TGAATATGGG
      ATCTCTTCAA GTCTAGTTCC AGTCCCTGTC TACCTTGTCG ACTTATACCC
-----

```

Fig. 14-9

```
3701 CCAAACAGGA TATCTGTGGT AAGCAGTCC TGCCCCGGCT CAGGGCCAAG
      GGTTCGTCCT ATAGACACCA TTCGTCAAGG ACGGGGCCGA GTCCCCGGTTC
-----
3751 AACAGATGGA ACAGCTGAAT ATGGGCCAAA CAGGATATCT GTGGTAAGCA
      TTGTCCTACCT TGTCGACTTA TACCCGGTTT GTCCTATAGA CACCATTCGT
-----
3801 GTTCCTGCCC CGGCTCAGG CCAAGAACAG ATGTCGCCCA GATGCGGTCC
      CAAGGACGGG GCCGAGTCCC GGTTCCTGTC TACCAGGGGT CTACGCCAGG
-----
3851 AGCCCTCAGC AGTTTCTAGA GAACCATCAG ATGTTCCAG GGTGCCCCAA
      TCGGGAGTCG TCAAAGATCT CTGGTAGTC TACAAAGGTC CCACGGGGTT
-----
3901 GGACCTGAAA TGACCCCTGTG CCTTATTGA ACTAACCAAT CAGTTCGCTT
      CCTGGACTTT ACTGGGACAC GGAATAAACT TGATTGGTTA GTCAAAGCGAA
-----
      Aval
      ~~~~~
3951 CTCGCTTCTG TTCGCGGGCT TCTGCTCCC GAGCTCAATA AAAGAGCCCA
      GAGCGAAGAC AAGCGCGCGA AGACGAGGGG CTCGAGTTAT TTCTCTGGGT
-----
      XmaI
      ~~~~~
      SmaI
      ~~~~~
      Aval
      ~~~~~
      Aval
      ~~~~~
4001 CAACCCCTCA CTCGGGGCGC CAGTCCTCCG ATTGACTGAG TCGCCCCGGT
      GTTGGGGAGT GAGCCCCCGG GTCAGGAGGC TAACTGACTC AGCGGGCCCA
-----
```

*Fig. 14-10*

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4051 ACCCGTGTAT CCAATAAACC CTCTTGCA GT TGCATCCGAC TTGTGGTCTC  
TGGGCACATA GGTATTGG GAGAACGTCA ACGTAGGCTG AACACCAGAG  
-----  
4101 GCTGTTCTT GGGAGGGTCT CCTCTGAGTG ATTGACTACC CGTCAGCGGG  
CGACAAGGAA CCTCTCCAGA GGAGACTCAC TAACTGATGG GCAGTCGCCC  
-----  
4151 GGTCTTTTCA TTTGGGGCTC GTCCGGGATC GGGAGACCCC TGCCCCAGGA  
CCAGAAAGTA AACCCCGAG CAGGCCCTAG CCTCTGCGG ACGGTCCCT  
-----  
4201 CCACCGACCC ACCACCGGA GGTAACTGG CTGCCTCGCG CGTTTCGGTG  
GGTGGCTGG TGGTGGCCCT CCATTGACC GACGGAGCGC GCAAAGCCAC  
-----  
4251 ATGACGGTGA AACCTCTGA CACATGCAGC TCCGGAGAC GGTACACAGCT  
TACTGCCACT TTTGGAGACT GTGTACGTCG AGGCCCTCTG CCAGTGTGGA  
-----  
4301 TGTCTGTAAG CGGATGCCGG GAGCAGACAA GCCCGTCAGG GCGCGTCAGC  
ACAGACATTC GCCTACGGCC CTCGTCTGTT CGGGCAGTCC CGCGCAGTCG  
-----  
4351 GGGTGTGGC GGGTGTGGG GCGCAGCCAT GACCCAGTCA CGTAGCGATA  
CCCACAACCG CCCACAGCCC CGCGTCGGTA CTGGGTCA GTGCCTAT  
-----  
4401 GCGGAGTGTA TACTGGCTTA ACTATGGGC ATCAGAGCAG ATTGTACTGA  
CGCCTCACAT ATGACCGAAT TGATACGCCG TAGTCTCGTC TAACATGACT  
-----  
-----  
4451 GAGTGCACCA TATGCGGTGT GAAATACCGC ACAGATGCGT AAGGAGAAAA  
CTCACGTGGT ATACGCCACA CTTTATGGCG TGTCACGCA TTCCTCTTTT  
-----

ApaLI

~~~~~

Fig. 14-11

4501 TACCGCATCA GCGGCTCTTC CGCTTCCTCG CTCACTGACT CGCTGCGCTC  
ATGGCGTAGT CCGCGAGAAG GCGAAGGAGC GAGTGACTGA GCGACGCGAG  
-----  
4551 GGTCGTTGG CTGCGGCGAG CCGTATCAGC TCACTCAAAG GCGGTAATAC  
CCAGCAAGCC GACGCCGCTC GCCATAGTCG AGTGAGTTTC CGCCATTATG  
-----  
4601 GGTATATCCAC AGAATCAGGG GATAACGCAG GAAAGAACAT GTGAGCAAAA  
CCAATAGGTG TCTTAGTCCC CTATTGCGTC CTTTCTTGTA CACTCGTTT  
-----  
4651 GGCCAGCAA AGGCCAGGAA CCGTAAAG GCGCGTTGC TGGCGTTT  
CCGGTCGTTT TCCGGTCCCTT GGCAATTTTC CCGCGCAACG ACCGCAAAA  
-----  
4701 CCATAGGCTC CGCCCCCTTG ACGAGCATCA CAAAATCGA CGCTCAAGTC  
GGTATCCGAG GCGGGGGGAC TGCTCGTAGT GTTTTGTAGCT GCGAGTTCAG  
-----  
4751 AGAGGTGGCG AAACCCGACA GGAATATAA GATACCAGGC GTTTCCTCCCT  
TCTCCACCGC TTGGGCTGT CCGTATATT CTATGGTCCG CAAAGGGGGA  
-----  
4801 GGAAGCTCCC TCGTGCGCTC TCCTGTTCCG ACCCTGCCGC TTACCGGATA  
CCTTCGAGGG AGCACGCGAG AGGACAAGGC TGGGACGGCG AATGGCCTAT  
-----  
4851 CCTGTCCGCC TTTCCTCCCTT CCGGAAGCGT GGCGCTTCT CATAGCTCAC  
GGACAGGCGG AAAGAGGGAA GCCCTTCGCA CCGGAAAGA GTATCGAGTG  
-----  
4901 GCTGTAGGTA TCTCAGTTCC GTGTAGTCCG TTCGCTCCAA GCTGGGCTGT  
CGACATCCAT AGAGTCAAGC CACATCCAGC AAGCGAGGT CGACCCGACA  
-----

*Fig. 14-12*

ApalI  
-----  
4951 GTGCACGAAC CCCCGTTCA GCCGACCGC TGCGCCTTAT CCGGTAACTA  
CACGTGCTTG GGGGGCAAGT CGGCTGGCG ACGCGAATA GGCCATTGAT  
-----  
5001 TCGTCTTGAG TCCAACCCG TAAGACACGA CTTATCGCCA CTGGCAGCAG  
AGCAGAACTC AGGTGGGCC ATTCTGTGCT GAATAGCGGT GACCGTCGTC  
-----  
5051 CCACTGGTAA CAGGATTAGC AGAGGAGGT ATGTAGGCGG TGCTACAGAG  
GGTGACCATT GTCCTAATCG TCTCGCTCCA TACATCCGCC ACGATGTCTC  
-----  
5101 TTCTTGAAGT GGTGGCCTAA CTACGGCTAC ACTAGAAGGA CAGTATTGG  
AAGAACTTCA CCACCGGATT GATGCCGATG TGATCTTCCT GTCATAAACC  
-----  
5151 TATCTGCGCT CTGCTGAAGC CAGTTACCTT CGGAAAAAGA GTTGGTAGCT  
ATAGACGCGA GACGACTTCG GTCAATGGAA GCCTTTTTCT CAACCATCGA  
-----  
5201 CTTGATCCGG CAAACAAACC ACCGCTGTA GCGGTGGTTT TTTTGTGTGC  
GAACTAGGCC GTTTGTTTGG TGGCGACCAT CGCCACCATA AAAACAACG  
-----  
5251 AAGCAGCAGA TTACGCGCAG AAAAAAGGA TCTCAAGAAG ATCCTTTGAT  
TTCGTCGTCT AATGCGCGTC TTTTTTTCCT AGAGTCTTC TAGGAAACTA  
-----  
5301 CTTTCTACG GGTCTGACG CTCAGTGGA CGAAACTCA CGTTAAGGGA  
GAAAAGATGC CCCAGACTGC GAGTCACCTT GCTTTGAGT GCAATTCCCT  
-----  
5351 TTTTGGTCAT GAGATTATCA AAAAGGATCT TCACCTAGAT CCTTTAAAT  
AAAACCACTA CTCTAATAGT TTTTCTCTAGA AGTGGATCTA GGAAAAATTA  
-----

*Fig. 14-13*

```

5401 TAAAAATGAA GTTTTAAATC AATCTAAAGT ATATATGAGT AAAC TTGGTC
      ATTTTACTT CAAAAATTAG TTAGATTCA TATATACTCA TTGGAACCCAG
-----
5451 TGACAGTTAC CAATGCTTAA TCAGTGAGGC ACCTATCTCA GCGATCTGTC
      ACTGTCAATG GTTACGAATT AGTCACTCCG TGGATAGAGT CGCTAGACAG
-----
5501 TATTTCTGTC ATCCATAGTT GCCTGACTCC CCGTCGTGTA GATAACTACG
      ATAAAGCAAG TAGGTATCAA CCGACTGAGG GGCAGCACAT CTATTGATGC
-----
5551 ATACGGGAGG GCTTACCATC TGGCCCCAGT GCTGCAATGA TACCGCGAGA
      TATGCCCTCC CGAATGGTAG ACCGGGTCA CGACGTTACT ATGGCGCTCT
-----
5601 CCCACGCTCA CCGGCTCCAG ATTTATCAGC AATAAACAG CCAGCCCGAA
      GGTGCGAGT GGCCGAGGTC TAAATAGTCG TTATTGTC GGTCCGCCCTT
-----
5651 GGGCCGAGCG CAGAAGTGGT CCTGCAACTT TATCCGCCTC CATCCAGTCT
      CCGGCTCGC GTCTTCACCA GGACGTTGAA ATAGGCGGAG GTAGGTCAGA
-----
5701 ATTAATTGTT GCCGGGAAGC TAGAGTAAGT AGTTCGCCAG TTAATAGTTT
      TAATTAAACA CGGCCCTTCG ATCTCATTCA TCAAGCGGTC AATTATCAA
-----
                                     PstI
                                     ~~~~~
5751 GCGCAACGTT GTTGCCATTG CTGCAGGCAT CGTGGTGTC CGTCGTCGT
      CGCGTTGCAA CAACGGTAAC GACGTCCGTA GCACCACAGT GCGAGCAGCA
-----
5801 TTGGTATGCG TTCAATCAGC TCCGGTTCCC AACGATCAAG GCGAGTTACA
      AACCATACCG AAGTAAGTCG AGGCCAAGGG TTGCTAGTTC CGCTCAATGT
-----

```

Fig. 14-14

5851 TGATCCCCCA TGTGTGTCAG AAAAGCGGTT AGCTCCTTCG GTCTCTCCGAT  
 ACTAGGGGGT ACAACACGTT TTTTCGCCAA TCGAGGAAGC CAGGAGGCTA

5901 CGTTGTCAGA AGTAAGTTGG CCGCAGTGT ATCACTCATG GTTATGGCAG  
 GCAACAGTCT TCATTCAACC GCGGTCACAA TAGTGAGTAC CAATACCGTC

5951 CACTGCATAA TTCTCTTACT GTCATGCCAT CCGTAAGATG CTTTCTCTGTG  
 GTGACGTATT AAGAGAAATGA CAGTACGGTA GGCATTCTAC GAAAAGACAC

6001 ACTGGTGAGT ACTCAACCAA GTCATTCTGA GAATAGTGA TCGCGCGACC  
 TGACCACTCA TGAGTTGGTT CAGTAAGACT CTTATCACAT ACGCCGCTGG

6051 GAGTTGCTCT TGCCCGGGGT CAACACGGGA TAATACCGG CCACATAGCA  
 CTCAACGAGA ACGGGCCGCA GTTGTCCTT ATTATGGCGC GGTGTATCGT

6101 GAACTTTAAA AGTGCTCATC ATTGGAAAAC GTTCTTCGGG GCGAAAACCTC  
 CTTGAAATTT TCACGAGTAG TAACCTTTTG CAAGAAGCCC CGCTTTTGAG

ApalI

6151 TCAAGGATCT TACCGCTGTT GAGATCCAGT TCGATGTAAC CCACTCGTGC  
 AGTTCCTAGA ATGGCGACAA CTCTAGGTCA AGCTACATTG GGTGAGCACG

ApalI

6201 ACCCAACTGA TCTTCAGCAT CTTTACTTT CACCAGCGTT TCTGGGTGAG  
 TGGGTTGACT AGAAGTCGTA GAAAATGAAA GTGGTCGCAA AGACCCACTC

Fig. 14-15

*Fig. 14-16*

6251 CAAAAACAGG AAGGCAAAAT GCCGCAAAA AGGGAATAAG GCGACACCG  
GTTTTGTCC TTCCGTTTTA CGGCGTTTTT TCCCTTATTC CCGTGTGCC  
-----  
6301 AAATGTTGAA TACTCATACT CTTCCTTTTT CAATATTATT GAAGCATTTA  
TTTACAACTT ATGAGTATGA GAAGGAAAAA GTTATAATAA CTTCCGTAAAT  
-----  
6351 TCAGGGTTAT TGTCTCATGA GCGGATACAT ATTGAATGT ATTAGAAAA  
AGTCCCAATA ACAGAGTACT CGCCTATGTA TAAACTTACA TAAATCTTT  
-----  
6401 ATAAACAAAT AGGGTTCCG CGCACATTTC CCCGAAAAGT GCCACCTGAC  
TATTTGTTTA TCCCCAAGGC GCGTGTAAG GGGCTTTTCA CCGTGGACTG  
-----  
6451 GTCTAAGAAA CCATTATTAT CATGACATTA ACCTATAAAA ATAGGCGTAT  
CAGATTCTTT GGTAATAATA GTACTGTAAT TGGATATTTT TATCCGCATA  
-----  
6501 CACGAGGCC TTTGTCCTTC AA  
GTGCTCCGG AAAGCAGAAG TT  
-----

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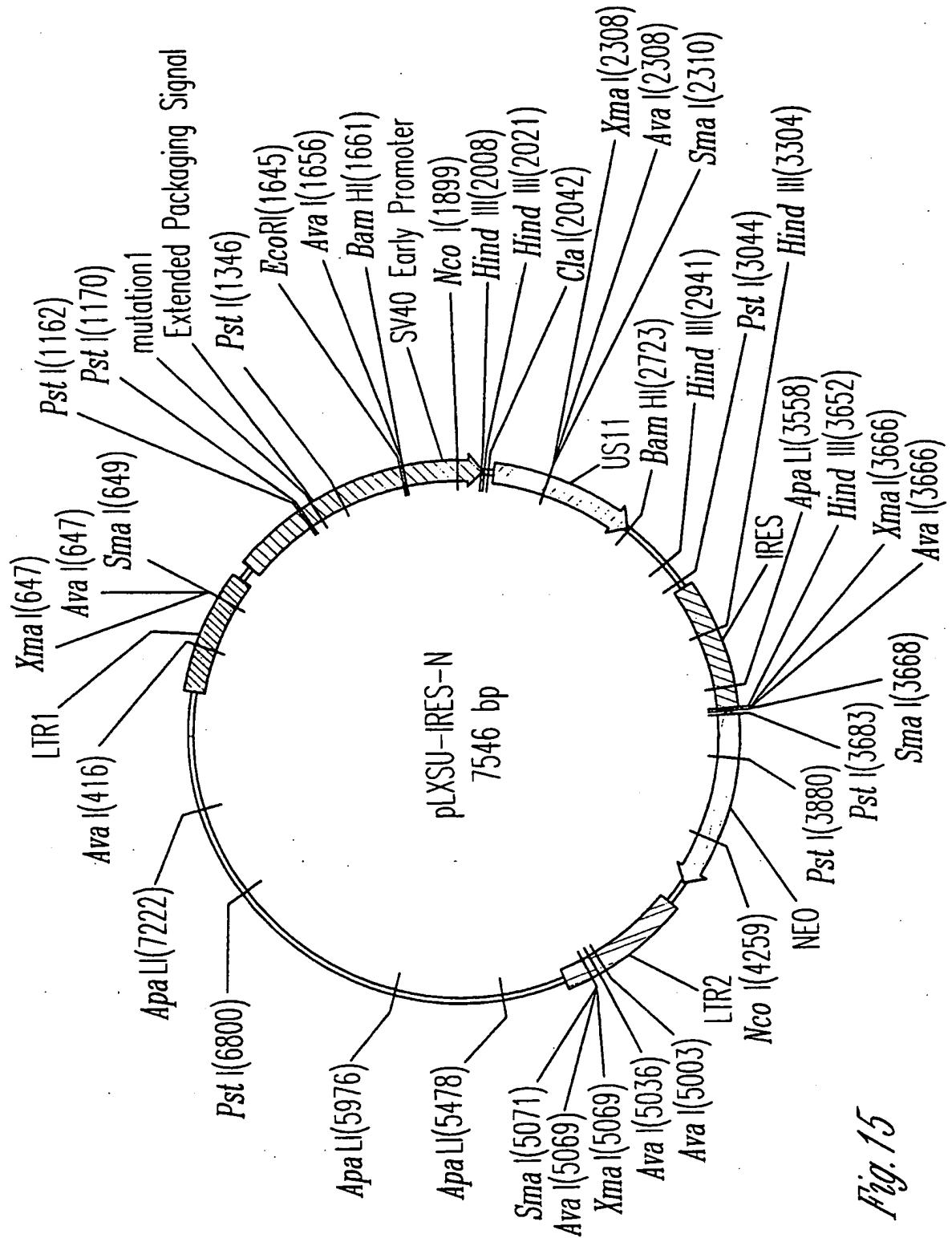


Fig. 15

1 GAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG  
CTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC  
-----  
51 AAAACTGTCC TCCAAATGTG TCCCCTCTAC ACTCCCAAT TCGCGGGCTT  
TTTGTACAGG AGGTTTACAC AGGGGAGTG TGAGGGTTTA AGCGCCCGAA  
-----  
101 CTGCCCTCTTA GACCACTCTA CCTATTCCC CACACTCACC GGAGCCCAAAG  
GACGGAGAAT CTGGTGAGAT GGGATAAGG GTGTGAGTGG CCTCGGTTTC  
-----  
151 CCGCGGCCCT TCCGTTTCTT TGCTTTTGAA AGACCCACC CGTAGGTGGC  
GGCGCCGGA AGGCAAAGAA ACGAAACTT TCTGGGTGG GCATCCACCG  
-----  
201 AAGCTAGCTT AAGTAACGCC ACTTIGCAAG GCATGGAAA ATACATAACT  
TTCGATCGAA TTCATGCGG TGAAACGTTT CGTACCTTTT TATGTATTGA  
-----  
251 GAGAATAGAA AAGTTCAGAT CAAGTCCAGG AACAAAGAA CAGCTGAATA  
CTCTTATCTT TTCAAGTCTA GTTCCAGTCC TTGTTTCTTT GTCGACTTAT  
-----  
301 CCAAACAGGA TATCTGTGGT AAGCGTTCC TGCCCGGCT CAGGSCCAAG  
GGTTTGTCTT ATAGACACCA TTCCGCAAGG ACGGGCCGA GTCCCGGTTT  
-----  
351 AACAGATGAG ACAGCTGAGT GATGGGCCAA ACAGGATATC TGTGTAAGC  
TTGTCTACTC TGTCGACTCA CTACCCGGTT TGTCCTATAG ACACCATTCG  
-----  
-----  
Aval  
-----  
401 AGTTCCTGCC CCGGCTCGG GCCAAGAACA GATGTCCCC AGATCGGTC  
TCAAGGACGG GGCCGAGCCC CGGTTCTTGT CTACCAGGG TCTACGCCAG  
-----

Fig. 16-1



```

451  CAGCCCTCAG CAGTTTCTAG TGAATCATCA GATGTTTCCA GGTGCCCCCA
      GTCGGGAGTC GTCAAAGATC ACTTAGTAGT CTACAAAGGT CCCACGGGGT
-----
501  AGGACCTGAA AATGACCCCTG TACCTTATTT GAACTAACCA ATCAGTTTCG
      TCCTGGACTT TTA CTGGGAC ATGGAATAAA CTTGATTGGT TAGTCAAGCG
-----
551  TTCTCGCTTC TGTTCGGCGG CTTCCGCTCT CCGAGCTCAA TAAAGAGACC
      AAGAGCGAAG ACAAGCGCGC GAAGGCGAGA GGCTCGAGTT ATTTTCTCGG
-----
                                     XmaI
                                     ~~~~~
                                     SmaI
                                     ~~~~~
                                     Aval
                                     ~~~~~
601  CACAACCCCT CACTCGGCGC GCCAGTCTTC CGATAGACTG CGTCGCCCGG
      GTGTTGGGGA GTGAGCCCGC CGGTCAGAAG GCTATCTGAC GCAGCGGGCC
-----
                                     XmaI
                                     ~
                                     SmaI
                                     ~
                                     Aval
                                     ~
651  GTACCCGTAT TCCCAATAAA GCCTCTTGCT GTTGCATCC GAATCGTGGT
      CATGGGCATA AGGTTTATTI CGGAGAACGA CAAACGTAGG CTTAGCACCA
-----
701  CTCGCTGTTT CTTGGGAGGG TCTCCTCTGA GTGATTGACT ACCCAGACG
      GAGCGACAAG GAACCTCTCC AGAGGAGACT CACTAACTGA TGGGTGCTGC
-----

```

Fig. 16-2

```

751 GGGGTCTTTC ATTTGGGGGC TCGTCCGGGA TTTGGAGACC CCTGCCCCAGG
    CCCCAGAAAG TAAACCCCGG AGCAGGCCCT AAACCTCTGG GGACGGGTCC
-----
801 GACCACCGAC CCACCACCGG GAGTAAGCT GGCCAGCAAC TTATCTGTGT
    CTGGTGGCTG GGTGGTGGCC CTCCATTGGA CCGGTCGTTG AATAGACACA
-----
851 CTGTCCGATT GTCTAGTGTG TATGTTTGAT GTTATGCGCC TGCCTCTGTA
    GACAGGCTAA CAGATCACAG ATACAACATA CAATACCGCG ACGCAGACAT
-----
901 CTAGTTAGCT AACTAGCTCT GTATCTGGCG GACCCGTGGT GGAACGTACG
    GATCAATCGA TTGATCGAGA CATAGACCGC CTGGGCACCA CCTTGACTGC
-----
951 AGTTCTGAAC ACCGGCCGC AACCTTGGGA GACGTCCCAG GGACTTTGGG
    TCAAGACTTG TGGCCGGCG TTGGGACCTT CTGCAGGGTC CCTGAAACCC
-----
1001 GGCCGTTTTT GTGCCCGGAC CTGAGGAAGG GAGTCGATGT GGAATCCGAC
    CCGGCAAAA CACCGGGCTG GACTCCTTCC CTCAGCTACA CCTTAGGCTG
-----
1051 CCCGTCAGGA TATGTGGTTC TGGTAGGAGA CGAGAACCTA AAACAGTTCC
    GGCAGTCCT ATACACCAAG ACCATCCTCT GCTCTTGGAT TTTGTCAAGG
-----
1101 CGCCTCCGTC TGAATTTTGG CTTTCGGTTT GGAACCGAAG CCGCGCGTCT
    GCGGAGGCAG ACTTAAAAAC GAAAGCCAAA CCTTGGCTTC GGCGCGCAGA
-----
                                PstI      PstI
                                ~~~~~~
1151 TGTCTGCTGC AGCGCTGCAG CATCGTTCTG TGTGTCTCT GTCTGACTGT
    ACAGACGACG TCGCGACGTC GTAGCAAGAC ACAACAGAGA CAGACTGACA
-----

```

Fig. 16-3

1201 GTTCTGTAT TTGTCTGAAA ATTAGGGCCA GACTGTTACC ACTCCCTTAA  
CAAAGACATA AACAGACTTT TAATCCCGGT CTGACAATGG TGAGGGAATT  
-----  
1251 GTTIGACCTT AGGTCACCTG AAAGATGTG AGCGGATCGC TCACAACCCAG  
CAAACTGGAA TCCAGTGACC TTCTCTACAGC TCGCCTAGCG AGTGTGGTC  
-----  
PstI  
-----  
1301 TCGGTAGATG TCAAGAAGAG ACGTTGGGTT ACCTCTGCT CTGCAGAAATG  
AGCCATCTAC AGTTCTTCTC TGCAACCCAA TGGAGAGACGA GACGTCTTAC  
-----  
1351 GCCAACCTTT AACGTCGGAT GGCCGCGAGA CGGCACCTTT AACCGAGACC  
CGGTTGGAAA TTGCAGCCTA CCGGCGCTCT GCCGTGGAAA TTGGCTCTGG  
-----  
1401 TCATCACCCA GGTAAAGATC AAGTCTTTT CACCTGGCCC GCATGGACAC  
AGTAGTGGGT CCAATTCTAG TTCCAGAAAA GTGGACCGGG CGTACCCTGTG  
-----  
1451 CCAGACCAGG TCCCCTACAT CGTGACCTGG GAAGCCTTGG CTTTGTGACCC  
GGTCTGGTCC AGGGGATGTA GCACTGGACC CTTCGGAACC GAAAACTGGG  
-----  
1501 CCTCCCCTGG GTCAAGCCCT TTGTACACCC TAAGCCTCCG CCTCCTCTTC  
GGGAGGGACC CAGTTCGGGA AACATGTGG AITCGGAGGC GGAGGAGAAG  
-----  
1551 CTCCATCCGC CCGTCTCTC CCCCTTGAAC CTCCTCGTTC GACCCCGCCT  
GAGGTAGGCG GGCAGAGAG GGGGAACCTG GAGGAGCAAG CTGGGGCGGA  
-----

Fig. 16-4

1601 CGATCCTCCC TTATCCAGC CCTCACTCCT TCTCTAGGCG CCGGAATTCC  
 GCTAGGAGGG AATAGGTCTG GGAGTGAGGA AGAGATCCGC GGCCTTAAGC  
 -----  
 BamHI  
 -----  
 Aval  
 -----  
 1651 TTAACCTCGAG GATCCGGCTG TGAATGTGT GTCAGTTAGG GTGTGGAAAG  
 AATTGAGCTC CTAGGCCGAC ACCTTACACA CAGTCAATCC CACACCTTTC  
 -----  
 1701 TCCCCAGGCT CCCCAGCAGG CAGAAGTATG CAAAGCATGC ATCTCAATTA  
 AGGGTCCGA GGGGTCGTCC GTCTTCATAC GTTTCGTACG TAGAGTTAAT  
 -----  
 1751 GTCAGCAACC AGGTGTGGAA AGTCCCCAGG CTCCCCAGCA GGCAGAAAGTA  
 CAGTCGTTGG TCCACACCTT TCAGGGGTCC GAGGGTCTGT CCGTCTTTCAT  
 -----  
 1801 TGCAAAGCAT GCATCTCAAT TAGTCAGCAA CCATAGTCCC GCCCCTAACT  
 ACGTTTCGTA CGTAGAGTTA ATCAGTCGTT GGTATCAGGG CGGGGATTGA  
 -----  
 NcoI  
 -----  
 1851 CCGCCCATCC CGCCCCTAAC TCCGCCCAGT TCCGCCCATTT CTCCGCCCCA  
 GCGGGGTAGG GCGGGGATG AGCGGGGTCA AGCGGGGTAA GAGCGGGGT  
 -----  
 NcoI  
 -----  
 1901 TGGCTGACTA ATTTTTTTTA TTTATGCAGA GGCCGAGGCC GCCTCGGCCT  
 ACCGACTGAT TAAAAAAAAT AAATACGTCT CCGGCTCCGG CGGAGCCGGA  
 -----

Fig. 16-5

```

1951 CTGAGCTATT CCAGAAAGTAG TGAGGAGGCT TTTTGGAGG CCTAGGCTTT
      GACTCGATAA GGTCCTTCATC ACTCCTCCGA AAAAACCTCC GGATCCGAAA
-----
      HindIII      HindIII      ClaI
      ~~~~~
2001 TGCAAAAAGC TTGGGCTGCA AGCTTGGTAC CGAGCTCGGA TCGATATCTG
      ACGTTTTTCG AACCCGACGT TCGAACCATG GCTCGAGCCT AGCTATAGAC
-----
2051 CGCCCGCGTC GACGGATGAA CCTTGTAAATG CTTATTCTAG CCCTCTGGGC
      GCCGGCGCAG CTGCCTACTT GGAACATTAC GAATAAGATC GGGAGACCCG
-----
2101 CCCGGTCGCG GGTAGTATGC CTGAATTATC CTTGACTCTT TTCGATGAAC
      GGGCCAGCGC CCATCATACG GACTTAATAG GAACTGAGAA AAGCTACTTG
-----
2151 CTCGCGCCCTT GGTGGAGACG GAGCCGTTAC CGCCTCTGTC CGATGTTTCG
      GAGCGGGAA CCACCTCTGC CTCGGCAATG GCGGAGACAG GCTACAAAGC
-----
2201 GAGTACCGAG TAGAGTATTC CGAGGCGCGC TCGTGCTCC GATCGGGCGG
      CTCATGGCTC ATCTCATAAG GCTCCGCGCG ACGCACGAGG CTAGCCCGCC
-----
2251 TCGACTGGAG GCTCTGTGGA CCCTGCGCGG GAACCTGTCC GTGCCCCACG
      AGCTGACCTC CGAGACACCT GGGACGCGCC CTTGGACAGG CACGGGTGCG
-----

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*Fig. 16-6*

XmaI  
-----  
SmaI  
-----  
AvaI  
-----

```

2301 CGACACCCCG GGTGTACTAC CAGACGCTGG AGGGCTACGC GGATCGAGTG
      GCTGTGGGGC CCACATGATG GTCTGCGACC TCCCGATGCG CCTAGCTCAC
-----
2351 CCGACGCCCG TGGAGGACGT CTCCGAAAGC CTCGTGCGAA AACGCTACTG
      GGCTGCGGCC ACCTCCTGCA GAGGCTTTCG GAGCAGCGTT TTGCGATGAC
-----
2401 GCTCCGGGAC TATCGTGTTC CCCAACGCAC AAACTCGTG TTGTTCTACT
      CGAGGCCCTG ATAGCACAAAG GGGTTGCGTG TTTTGAGCAC AACAAAGATGA
-----
2451 TTTCCCCCTG CCACCAATGC CAAACTTATT ATGTAGAGTG CGAACCCCGG
      AAAGGGGGAC GGTGGTTACG GTTTGAATAA TACATCTCAC GCTTGGGGCC
-----
2501 TGCCTCGTGC CTTGGGTTC CCTGTGGAGC TCGTTAGAGG ACATCGAAGC
      ACGGAGCACG GAACCCCAAG GGACACCTCG AGCAATCTCC TGTAGCTTGC
-----
2551 ACTATTGTTC GAAGATCGCC GTCTAATGGC GTACTACGCG CTCACGATTA
      TGATAACAAG CTTCTAGCGG CAGATTACCG CATGATGCGC GAGTGCTAAT
-----
2601 AGTCGGCGCA GTATACGCTG ATGATGGTGG CAGTGATTCA AGTGTTTTGG
      TCAGCCGCGT CATATGCCAC TACTACCACC GTCACTAAGT TCACAAAACC
-----
2651 GGGCTGTATG TGAAAGGTTG GCTGCACCGA CATTTTCCCT GGATGTTTTC
      CCCGACATAC ACTTTCCAAC CGACGTGGCT GTAAAAGGGA CCTACAAAAG
-----

```

*Fig. 16-7*

## BamHI

2701 GGACCAGTGG TGAATTCAG TGGATCCACT AGTAACGGCC GCCAGTGTGC  
CCTGGTCACC ACTTTAAGTC ACCTAGGTGA TCATGCGCG CCGTCACACG

2751 TGGAAATTAAT TCGCTGTCTG CGAGGGCCGG CTGTTGGGT GAGTACTCCC  
ACCTTAATTA AGCGACAGAC GCTCCCGGCC GACAACCCCA CTCATGAGGG

2801 TCTCAAAAGC GGGCATGACT TCTGCGCTAA GATTGTCACT TTCCAAAAAC  
AGAGTTTTCG CCCGTACTGA AGACGCGATT CTAACAGTCA AAGTTTTCG

2851 GAGGAGGATT TGATATTCAC CTGGCCCGCG GTGATGCCCTT TGAGGGTGGC  
CTCCTCCTAA ACTATAAGTG GACCGGGCGC CACTACGGAA ACTCCACCG

## HindIII

2901 CGCGTCCATC TGGTCAGAAA AGACAATCTT TTGTGTGCA AGCTTGAGGT  
GGCAGGTAG ACCAGTCTTT TCTGTAGAA AAACAACAGT TCGAACTCCA

2951 GTGGCAGGCT TGAGATCTGG CCATACACTT GAGTGACAAT GACATCCACT  
CACCGTCCGA ACTCTAGACC GGTATGTGAA CTCACTGTTA CTGTAGGTGA

## PstI

3001 TTGCCCTTTCT CTCCACAGGT GTCCACTCCC AGGTCCAACT GCAGGTCGAT  
AACGGAAAGA GAGGTGTCCA CAGGTGAGGG TCCAGGTTGA CGTCCAGCTA

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Fig. 16-8

3051 CGAGCATGCA TCTAGGGCGG CCAATTGGCC CCTCTCCCTC CCCCCCCCCT  
GCTCGTACGT AGATCCCGCC GGTTAAGCGG GGAGAGGGAG GGGGGGGGGA  
-----  
3101 AACGTTACTG GCCGAAGCCG CTTGGAATAA GGCCGGTGTG TGTTTGTCTA  
TTGCAATGAC CGGCTTCGGC GAACCTTATT CCGGCCACAC ACAAACAGAT  
-----  
3151 TATGTGATTT TCCACCATAT TGCCGTCTTT TGGCAATGTG AGGCCCCGGA  
ATACACTAAA AGGTGGTATA ACGCAGAAA ACCGTTACAC TCCCGGGCCT  
-----  
3201 AACCTGGCCC TGTCTTCTTG ACGAGCATTC CTAGGGGTCT TTCCCTCTCTC  
TTGGACCGGG ACAGAAGAAC TGCTCGTAAG GATCCCCAGA AAGGGGAGAG  
-----  
3251 GCCAAAGGAA TGCAAGTCT GTTGAATGTC GTGAAGGAAG CAGTTCCTCT  
CGGTTTCCTT ACGTTCCAGA CAACTTACAG CACTTCCTTC GTCAAGGAGA  
-----  
HindIII  
-----  
3301 GGAAGCTTCT TGAAGACAAA CAACGTCTGT AGCGACCCCTT TGCAGGCAGC  
CCTTCGAAGA ACTTCTGTTT GTTGCAGACA TCGCTGGGAA ACGTCCGTCTG  
-----  
3351 GGAACCCCCC ACCTGGCGAC AGGTGCCCTCT GCGGCCAAAA GCCACGTGTA  
CCTTGGGGG TGGACCGCTG TCCACGGAGA CGCCGGTTTT CGGTGCACAT  
-----  
3401 TAAGATACAC CTGCAAAAGG GGCACAAACC CAGTGCCACG TTGTGAGTTG  
ATTCTATGTG GACGTTTCCG CCGTGTGGG GTCACGGTGC AACACTCAAC  
-----  
3451 GATAGTTGTG GAAAGAGTCA AATGGCTCTC CTCAAGCGTA GTCAACAAGG  
CTATCAACAC CTTTCTCAGT TTACCGAGAG GAGTTCGCAT CAGTTGTTCC  
-----



```

3501  GGCTGAAGGA  TGCCCAAGAG  GTACCCCAATT  GTATGGGAAT  CTGATCTGGG
      CCGACTTCCT  ACGGTCCTC  CATGGGTAA  CATACCCTTA  GACTAGACCC
-----
      ApalI
      ~~~~~
3551  GCCTCGGTGC  ACATGCTTTA  CATGTGTTTA  GTCGAGGTTA  AAAAGCTCT
      CGGAGCCACG  TGTACGAAAT  GTACACAAAT  CAGCTCCAAT  TTTTTCGAGA
-----
3601  AGGCCCCCG  AACCACGGG  ACGTGGTTT  CCTTGAATA  ACACGATGAT
      TCCGGGGGC  TTGGTGCCC  TGCACCAAA  GGAACCTTT  TGTGCTACTA
-----
      XmaI
      ~~~~~
      SmaI
      ~~~~~
      Aval
      ~~~~~
      HindIII
      ~~~~~
      PstI
      ~~~~~
3651  AAGCTTGCCA  CAACCCCGG  ATAATTCCTG  CAGCCAATAT  GGGATCGGCC
      TTCGAACGGT  GTGGGGCCC  TATTAAGGAC  GTCGGTTATA  CCTAGCCCG
-----
3701  ATTGAACAAG  ATGGATTGCA  CGCAGGTCT  CCGGCCGCTT  GGGTGGAGAG
      TAACTTGTT  TACCTAACGT  GCGTCCAAGA  GGCCGGCGAA  CCCACCTCTC
-----
3751  GCTATTCCGC  TATGACTGG  CACAACAGAC  AATCGGCTGC  TCTGATGCCG
      CGATAAGCCG  ATACTGACCC  GTGTGTCTG  TTAGCCGACG  AGACTACGGC
-----
3801  CCGTGTCCG  GCTGTACGG  CAGGGCGCC  CGTTCTTTT  TGTCAAGACC
      GGCACAAGC  CGACAGTCG  GTCCCCGGG  GCCAAGAAA  ACAGTCTGG
-----

```

Fig. 16-10

## Pst I

3851 GACCTGTCCG GTGCCCTGAA TGAAGTGCAG GACGAGGCAG CGCGGCTATC  
CTGGACAGGC CACGGGACTT ACTTGACGTC CTGCTCCGTC GCGCCGATAG  
-----  
3901 GTGGCTGGCC ACGACGGGCG TTCCTTGCGC AGCTGTGCTC GACGTTGTCA  
CACCGACCGG TGCTGCCCGC AAGGAACGCG TCGACACGAG CTGCAACAGT  
-----  
3951 CTGAAGCGGG AAGGACTGG CTGCTATTGG GCGAAGTGCC GGGGCAGGAT  
GACTTCGCCC TTCCCTGACC GACGATAACC CGCTTCACGG CCCCCTCCTA  
-----  
4001 CTCCTGTTCAT CTCACCTTGC TCCTGCCGAG AAAGTATCCA TCATGGCTGA  
GAGGACAGTA GAGTGGAACG AGGACGGCTC TTTCATAGGT AGTACCGACT  
-----  
4051 TGCAATGCGG CGGCTGCATA CGCTTGATCC GGCTACCTGC CCATTGACCC  
ACGTTACGCC GCCGACGTAT GCGAAGTAGG CCGATGGACG GGTAAAGCTGG  
-----  
4101 ACCAAGCGAA ACATCGCATC GAGCGAGCAC GTACTCGGAT GGAAGCCGGT  
TGGTTGCTTT TGTAGCGTAG CTCGCTCGTG CATGAGCCTA CCTTCGGCCA  
-----  
4151 CTGTGCGATC AGGATGATCT GGACGAAGAG CATCAGGGC TCGCGCCAGC  
GAACAGCTAG TCCTACTAGA CCTGCTTCTC GTAGTCCCCG AGCGCGGTG  
-----  
4201 CGAACTGTTC GCCAGGCTCA AGGCGCGCAT GCCCGACGGC GAGGATCTCG  
GCTTGACAAG CGGTCCGAGT TCCGCGCGTA CGGGCTGCCG CTCCTAGAGC  
-----

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Fig. 16-11

## NcoI

```

4251 TCGTGACCCA TGGCGATGCC TGCTTGCCGA ATATCATGGT GGAAATGGC
      AGCACTGGGT ACGCTACGG ACGAACGGCT TATAGTACCA CCTTTTACCG
-----
4301 CGCTTTTCTG GATTTCATCGA CTGTGGCCGG CTGGGTGTGG CGGACCGCTA
      GCGAAAAGAC CTAAGTAGCT GACACCGGCC GACCCACACC GCCTGGCGAT
-----
4351 TCAGGACATA GCGTTGGCTA CCGTGATAT TGCTGAAGAG CTTGGCGGCG
      AGTCCTGTAT CGCAACCGAT GGCACCTATA ACGACTTCTC GAACCGCCGC
-----
4401 AATGGGCTGA CCGCTTCCTC GTGCTTTACG GTATCGCCGC TCCCATTTCG
      TTACCCCGACT GCGGAAGGAG CACGAAATGC CATAGCGGCG AGGCTAAGC
-----
4451 CAGCGCATCG CCTTCTATCG CCTTCTTGAC GAGTTCGTGT CGAGGCGGAT
      GTCGCGTAGC GGAAGATAGC GGAAGAACTG CTCGAAGACCA GCTCCGCCCTA
-----
4501 CTGATCAAGA GACAGGATGA GGATCGTTTC GCGCGGGAAT CTGGGGTTTCG
      GACTAGTTCT CTGTCTTACT CCTAGCAAAG CGCGCCCTGA GACCCCAAGC
-----
4551 ATAAAATAAA AGATTTTATT TAGTCTCCAG AAAAAGGGG GAATGAAAGA
      TATTTTATTT TCTAAAATAA ATCAGAGGTC TTTTTCCTCC CTTACTTTCT
-----
4601 CCCACCTGT AGGTTTGGCA AGCTAGCTTA AGTAAAGCCA TTTTGCAAGG
      GGGGTGGACA TCCAAACCGT TCGATCGAAT TCATTGCGGT AAAACGTTCC
-----
4651 CATGGAAAAA TACATAACTG AGAATAGAGA AGTTCAGATC AAGGTCAGGA
      GTACCTTTTT ATGTAATTGAC TCTTATCTCT TCAAGTCTAG TTCCAGTCTC
-----
4701 ACAGATGGAA CAGCTGAATA TGGGCCAAAC AGGATATCTG TGGTAAGCAG
      TGCTACCTT GTCGACTTAT ACCCGGTTTG TCCTATAGAC ACCATTCTGC

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Fig. 16-12

```

4751 TTCCTGCCCC GGCTCAGGGC CAAGAACAGA TGGAACAGCT GAATATGGGC
    AAGGACGGGG CCGAGTCCCG GTTCTTGCTT ACCTTGTCGA CTTATACCCG
-----
4801 CAAACAGGAT ATCTGTGGTA AGCAGTTCCT GCCCGGCTC AGGGCCAAGA
    GTTGTGTCCTA TAGACACCAT TCGTCAAGGA CGGGGCCGAG TCCCGGTTCT
-----
4851 ACAGATGGTC CCCAGATGCG GTCCAGCCCT CAGCAGTTTC TAGAGAACCA
    TGTCTACCAG GGTCTACGC CAGGTCGGGA GTCGTCAAAG ATCTCTTGGT
-----
4901 TCAGATGTTT CCAGGGTGCC CCAAGGACCT GAAATGACCC TGTGCCTTAT
    AGTCTACAAA GGTCCACCGG GGTTCCTGGA CTTTACTGGG ACACGGAATA
-----
4951 TTGAACTAAC CAATCAGTTC GCTTCTCGCT TCTGTTCGCG CGCTTCTGCT
    AACTTGATTG GTTAGTCAAG CGAAGAGCGA AGACAAGCGC GCGAAGACGA
-----
                    AvaI                      AvaI
                    ~~~~~                      ~~~~~
5001 CCCCGAGCTC AATAAAAGAG CCCACAACCC CTCACTCGGG GCGCCAGTCC
    GGGGCTCGAG TTATTTTCTC GGGTGTGGG GAGTGAGCCC CGCGGTCAGG
-----
                    XmaI
                    ~~~~~
                    SmaI
                    ~~~~~
                    AvaI
                    ~~~~~
5051 TCCGATTGAC TGAGTCGCCC GGGTACCCGT GTATCCAATA AACCTCTTGG
    AGGCTAACTG ACTCAGCGGG CCCATGGGCA CATAGGTTAT TTGGGAGAAC
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5101 CAGTTGCATC CGACTTGTGG TCTCGTGT TCTTGGGAGG GTCTCCTCTG
      GTCAACGTAG GCTGAACACC AGAGCGACAA GGAACCTTCC CAGAGGAGAC
-----
5151 AGTGATTGAC TACCCGTCAG CGGGGTCTT TCATTGGGG GCTCGTCCGG
      TCACTAACTG ATGGGCAGTC GCCCCAGAA AGTAAACCCC CGAGCAGGCC
-----
5201 GATCGGGAGA CCCCTGCCA GGGACCACCG ACCACCACC GGGAGGTAAG
      CTAGCCCTCT GGGACGGGT CCTTGGTGGC TGGTGGTGG CCTTCCATT
-----
5251 CTGGCTGCCT CGCGCGTTTC GGTGATGACG GTGAAACCT CTGACACATG
      GACCGACGGA GCGCGCAAG CCACTACTGC CACTTTTGA GACTGTGTAC
-----
5301 CAGCTCCCGG AGACGTCAC AGCTGTCTG TAAGCGGATG CCGGGAGCAG
      GTCGAGGGCC TCTGCCAGTG TCGAACAGAC ATTGCGCTAC GGCCCTCGTC
-----
5351 ACAAGCCCGT CAGGGCGCGT CAGCGGTGT TGGCGGTGT CGGGCGCAG
      TGTTGGGCA GTCCCGGCA GTCCGCCACA ACCGCCACA GCCCGCGTC
-----
5401 CCATGACCCA GTCACGTAGC GATAGCGGAG TGTATACTGG CTTAACTATG
      GGTACTGGGT CAGTGCATCG CTATCGCCTC ACATATGACC GAATTGATAC
-----
                                     ApalI
                                     ~~~~~
5451 CGGCATCAGA GCAGATTGTA CTGAGAGTGC ACCATATGCG GTGTGAAATA
      GCCGTAGTCT CGTCTAACAT GACTCTCAG TGGTATACGC CACACTTTAT
-----
5501 CCGCACAGAT GCGTAAGGAG AAAATACCGC ATCAGGCGCT CTTCCGCTTC
      GCGGTGTCTA CGCATTCCTC TTTTATGGCG TAGTCCGCGA GAAGGCGAAG
-----

```

Fig. 16-14

5551 CTCGCTCACT GACTCGCTGC GCTCGGTCGT TCGGCTGCGG CGAGCGGTAT  
GAGCGAGTGA CTGAGCGACG CGAGCCAGCA AGCCGACGCC GCTCGCCATA

5601 CAGCTCACTC AAAGGCGGTA ATACGGTTAT CCACAGAATC AGGGATAAAC  
GTCGAGTGAG TTTCGGCCAT TATGCCAATA GGTGTCITAG TCCCTATTG

5651 GCAGGAAAGA ACATGTGAGC AAAAGGCCAG CAAAAGGCCA GGAACCGTAA  
CGTCCCTTCT TGACACTCG TTTTCCGGTC GTTTCCGGT CCTTGGCAT

5701 AAAGGCCGCG TTGCTGGCGT TTTTCCATAG GCTCCGCCCC CCTGACGAGC  
TTTCCGGCGC AACGACCGCA AAAAGGTATC CGAGGCGGGG GGAATGCTCG

5751 ATCACAAAAA TCGACGCTCA AGTCAGAGGT GGCAGAACCC GACAGGACTA  
TAGTGTTTT AGCTGCGAGT TCAGTCTCCA CCGCTTGGG CTGTCTTGAT

5801 TAAAGATACC AGGCGTTTCC CCCTGGAAGC TCCCTCGTGC GCTCTCCTGT  
ATTCTATGG TCCGCAAAGG GGGACCTTCG AGGAGACACG CGAGAGGACA

5851 TCCGACCCCTG CCGCTTACCG GATACCCTGC CGCCTTCTC CCTTCGGGAA  
AGGCTGGGAC GCGGAATGGC CTATGGACAG GCGGAAAGAG GGAAGCCCTT

5901 GCGTGGCGCT TTCTCATAGC TCACGCTGTA GGTATCTCAG TTCGGTGTAG  
CGCACCCGGA AAGAGTATCG AGTGGACAT CCATAGAGTC AAGCCACATC

ApalI

5951 GTCGTTGCGT CCAAGCTGGG CTGTGTGCAC GAACCCCCCG TTCAGCCCGA  
CAGCAAGCGA GGTTCGACCC GACACACGTG CTGGGGGGC AAGTCGGGT

6001 CCGTGCGCC TTATCCGGA ACTATCGTCT TGAGTCCAAC CCGTAAGAC  
GGCGACGGG AATAGGCCAT TGATAGCAGA ACTCAGGTG GGCCATTCTG  
-----  
6051 ACGACTTATC GCCACTGGCA GCAGCCACTG GTAACAGGAT TAGCAGAGCG  
TGCTGAATAG CCGTGACCGT CGTCGGTGAC CATTGTCCCTA ATCGTCTCGC  
-----  
6101 AGGTATGTAG GCGGTGCTAC AGAGTTCCTG AAGTGGTGGC CTAACCTACGG  
TCCATACATC CGCCACGATG TCTCAAGAAC TTCACCACCG GATTGATGCC  
-----  
6151 CTACACTAGA AGGACAGTAT TTGGTATCTG CGCTCTGCTG AAGCCAGTTA  
GATGTGATCT TCCGTGTCATA AACCATAGAC GCGAGACGAC TTCGGTCAAT  
-----  
6201 CCTTCGGAAA AAGAGTTGGT AGCTCTTGAT CCGGCAAAACA AACCAACCGCT  
GGAAGCCCTT TTCTCAACCA TCGAGAACTA GGCCGTTTGT TTGGTGGCGA  
-----  
6251 GGTAGCGGTG GTTTTCTTGT TTGCAAGCAG CAGATTACGC GCAGAAAAAA  
CCATCGCCAC CAAAAAACA AACGTTCTGTC GTCTAATGCG CGTCTTTTCT  
-----  
6301 AGGATCTCAA GAAGATCCTT TGATCTTTTC TACGGGGTCT GACGCTCAGT  
TCCTAGAGTT CTTCTAGGAA ACTAGAAAAAG ATGCCCCAGA CTGCGAGTCA  
-----  
6351 GGAACGAAAA CTCACGTAA GGGATTTTGG TCATGAGATT ATCAAAAAAGG  
CCTTGCTTTT GAGTGCAATT CCCTAAACC AGTACTCTAA TAGTTTCTCC  
-----  
6401 ATCTTCACCT AGATCCTTTT AAATTAAAA TGAAGTTTAA AATCAATCTA  
TAGAAGTGGA TCTAGGAAAA TTTAATTTTT ACTTCAAAAT TTAGTTAGAT  
-----

*Fig. 16-16*

6451 AAGTATATAT GAGTAAACTT GGTCTGACAG TTACCAATGC TTAATCAGTG  
TTCATATATA CTCATTGAA CCAGACTGTC AATGGTTACG AATTAGTCAC  
-----  
6501 AGGCACCTAT CTCAGCGATC TGTCTATTTC GTTCATCCAT AGTTGCCTGA  
TCCGTGGATA GAGTCGCTAG ACAGATAAAG CAAGTAGGTA TCAACGGACT  
-----  
6551 CTCCCGTCG TGTAGATAAC TACGATACGG GAGGCTTAC CATCTGGCCC  
GAGGGGCAGC ACATCTATTG ATGCTATGCC CTCCCAGATG GTAGACCGGG  
-----  
6601 CAGTGCTGCA ATGATACCGC GAGACCCACG CTCACCGGCT CCAGATTAT  
GTCACGACGT TACTATGGCG CTCTGGGTGC GAGTGGCCGA GGTCTAAATA  
-----  
6651 CAGCAATAAA CCAGCCAGCC GGAAGGGCCG AGCGCAGAAG TGGTCCTGCA  
GTCGTTATTT GGTCGGTCCG CCTTCCCGGC TCGCGTCTTC ACCAGGACGT  
-----  
6701 ACTTTATCCG CCTCCATCCA GTCTATTAAAT TGTTGCCGGG AAGCTAGAGT  
TGAAATAGGC GGAGGTAGGT CAGATAAATA ACAACGGCCC TTCGATCTCA  
-----  
PstI  
-----  
6751 AAGTAGTTCC CCAGTTAATA GTTTGCGCAA CGTTGTTGCC ATTGCTGCAG  
TTCATCAAGC GGTCAATTAT CAAACGCGTT GCAACAACGG TAACGACGTC  
-----  
6801 GCATCGTGGT GTCACGCTCG TCGTTTGGTA TGGCTTCATT CAGCTCCGGT  
CGTAGCACCA CAGTGGGAGC AGCAAACCAT ACCGAAGTAA GTCGAGGCCA  
-----  
6851 TCCCAACGAT CAAGGCGAGT TACATGATCC CCCATGTTGT GCAAAAAGC  
AGGGTTGCTA GTTCCGCTCA ATGTACTAGG GGTACAACA CGTTTTTTCG  
-----

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Fig. 16-17



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6901  GGTAGCTCC TTCGGTCCTC CGATCGTTGT CAGAAGTAAG TTGGCCGCAG
      CCAATCGAGG AAGCCAGGAG GCTATCATTG AACGGCGGTC
-----
6951  TGTATCACT CATGGTTATG GCAGCACTGC ATAACTCTCT TACTGTCAATG
      ACAATAGTGA GTACCAATAC CGTCGTGACG TATTAAGAGA ATGACAGTAC
-----
7001  CCATCCGTAA GATGCTTTTC TGTGACTGGT GAGTACTCAA CCAAGTCATT
      GGTAGGCATT CTACGAAAAG ACACCTGACCA CTCATGAGTT GGTTCAGTAA
-----
7051  CTGAGAATAG TGTATGCGGC GACCGAGTTG CTCTTGCCCG GCGTCAACAC
      GACTCTTATC ACATACGCCG CTGGCTCAAC GAGAACGGGC CGCAGTTGTG
-----
7101  GGGATAATAC CGGCCACAT AGCAGAACTT TAAAGTGCT CATCATTTGA
      CCTATTATG GCGGGTGTA TCGTCTTGAA ATTTTCACGA GTAGTAACCT
-----
7151  AAACGTTCTT CGGGCGGAAA ACTCTCAAGG ATCTTACCGC TGTTGAGATC
      TTTGCAAGAA GCCCGCTTT TGAGAGTTCC TAGAATGGCG ACAACTCTAG
-----
                                     ApaLI
                                     ~~~~~
7201  CAGTTCGATG TAACCCACTC GTGCACCCAA CTGATCTTCA GCATCTTTTA
      GTCAAGCTAC ATTGGGTGAG CACGTGGGTT GACTAGAAGT CGTAGAAAAT
-----
7251  CTTTCACCAAG CGTTTCTGGG TGAGCAAAA AAGTCCGCA
      GAAAGTGGTC GCAAAGACCC ACTCGTTTTT GTCCCTCCGT TTTACGGCGT
-----
7301  AAAAAGGGAA TAAGGGCGAC ACGGAAATGT TGAATACTCA TACTCTTCCT
      TTTTTCCTT ATTCCCGCTG TGCCTTTTACA ACTTATGAGT ATGAGAAGGA
-----

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Fig. 16-18

*Fig. 16-19*

7351 TTTTCAATAT TATTGAAGCA TTTATCAGGG TTATTGTCTC ATGAGCGGAT  
AAAAGTTATA ATAACTTCGT AAATAGTCCC AATAACAGAG TACTCGCCTA  
-----  
7401 ACATATTGA ATGTATTAG AAAAATAAAC AATAGGGGT TCCGCGCACA  
TGTATAAACT TACATAAATC TTTTTATTG TTTATCCCCA AGGCGCGTGT  
-----  
7451 TTTCCCCGAA AAGTGCCACC TGACGTCTAA GAAACCATTA TTATCATGAC  
AAAGGGGCTT TTCACGGTGG ACTGCAGATT CTTTGGTAAT AATAGTACTG  
-----  
7501 ATTAACCTAT AAAAATAGGC GTATCACGAG GCCCTTTCGT CTTCAA  
TAATTGGATA TTTTATCCG CATAGTGCTC CGGAAAGCA GAAGTT  
-----

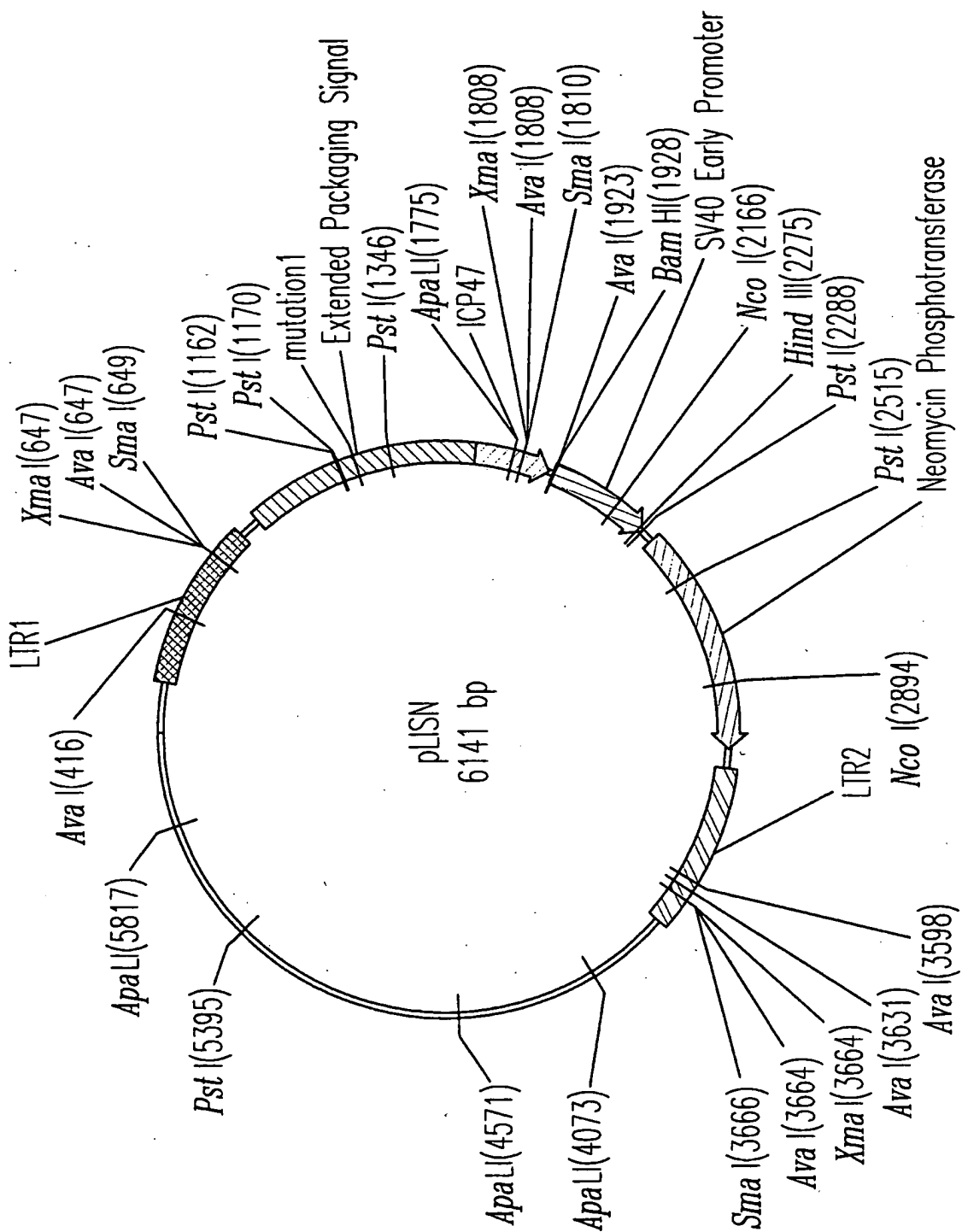


Fig. 17

1 GAATTGCTAG CAATTGCTAG CAATTCTATC CAGATCACCG  
CTTAACGATC GTTAACGATC GTTAACGATC GTTAAGTATG GTCTAGTGCG  
-----  
51 AAAACTGTCC TCCAAATGTG TCCCCCTCAC ACTCCCAAAT TCGCGGGCTT  
TTTGTACAGG AGGTTTACAC AGGGGGAGTG TGAGGGTTTA AGCGCCCGAA  
-----  
101 CTGCCCTCTTA GACCACTCTA CCTATTCCC CACACTCAC GGAGCCAAAG  
GACGGAGAAT CTGGTGAGAT GGGATAAGGG GTGTGAGTGG CCTCGGTTTC  
-----  
151 CCGCGGGCCCT TCCGTTTCTT TCGTTTGAAG AGACCCACCC CGTAGGTGGC  
GGCGCCGGGA AGGCAAGAA ACGAAAACCT TCTGGGGTGG GCATCCACCG  
-----  
201 AAGCTAGCTT AAGTAACGCC ACTTTGCAAG GCATGGAAA ATACATAACT  
TTCGATCGAA TTCAATGCGG TGAACGTTT CGTACCTTTT TATGTATTGA  
-----  
251 GAGAATAGAA AAGTTCAGAT CAAGTTCAGG AACAAGAAA CAGCTGAATA  
CTCTTATCTT TTCAAGTCTA GTTCCAGTCC TTGTTTCTTT GTCCGACTTAT  
-----  
301 CCAAAACAGGA TATCTGTGGT AAGCGGTTCC TGCCCCGGCT CAGGGCCAAAG  
GGTTTGTCTT ATAGACACCA TTCGCCAAGG ACGGGGCCGA GTCCCCGGTTC  
-----  
351 AACAGATGAG ACAGCTGAGT GATGGGCCAA ACAGGATATC TGTGGTAAGC  
TTGTCTACTC TGTCGACTCA CTACCCGGTT TGTCCTATAG ACACCATTCG  
-----  
Aval  
~~~~~  
401 AGTTCCTGCC CCGGCTCGGG GCCAAGAACA GATGGTCCCC AGATCGGGTC  
TCAAGGACGG GGCCGAGCCC CGGTTCTTGT CTACCGAGGG TCTACGCCAG  
-----

*Fig. 18-1*

451 CAGCCCTCAG CAGTTTCTAG TGAATCATCA GATGTTTCCA GGGTGCCCCA  
 GTCGGGAGTC GTCAAAGATC ACTTAGTAGT CTACAAAGGT CCCACGGGGT

501 AGGACCTGAA AATGACCCCTG TACCTTATTT GAACTAACCA ATCAGTTCGC  
 TCCTGGACTT TTA CTGGGAC ATGGAATAAA CTTGATTGGT TAGTCAAGCG

551 TTCTCGCTTC TGTTCGGCGG CTTCCGCTCT CCGAGCTCAA TAAAGAGGCC  
 AAGAGCGAAG ACAAGCGCGC GAAGCGAGA GGCTCGAGTT ATTTTCTCGG

XmaI

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SmaI

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AvaI

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601 CACAACCCCT CACTCGGCGC GCCAGTCTTC CGATAGACTG CGTCGCCCGG  
 GTGTTGGGA GTGAGCCCGC CGGTCAGAAG GCTATCTGAC GCAGCGGGCC

XmaI

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SmaI

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AvaI

651 GTACCCGTAT TCCCAATAAA GCCTCTTGCT GTTGCATCC GAATCGTGGT  
 CATGGGCATA AGGTTATTT CGGAGAACGA CAAACGTAGG CTTAGCACCA

701 CTCGCTGTTT CTTCGGAGGG TCTCCTCTGA GTGATTGACT ACCCAGACG  
 GAGCGACAAG GAACCTCTCC AGAGGAGACT CACTAACTGA TGGGTGCTGC

Fig. 18-2

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751  GGGGTCTTTC ATTGGGGGC TCGTCCGGGA TTGGAGACC CCTGCCCAGG
      CCCCAGAAAG TAAACCCCGG AGCAGGCCCT AACCTCTGG GGACGGGTCC
-----
801  GACCACCGAC CCACCACCGG GAGGTAAGCT GGCCAGCAAC TTATCTGTGT
      CTGGTGGCTG GGTGGTGGCC CTCCATTGGA CCGGTCGTTG AATAGACACA
-----
851  CTGTCCGATT GTCTAGTCTC TATGTTTGAT GTTATGCGCC TGCCTCTGTA
      GACAGGCTAA CAGATCACAG ATACAACTA CAATACGCGG ACGCAGACAT
-----
901  CTAGTTAGCT AACTAGCTCT GTATCTGGCG GACCCGTGGT GGAACGTACG
      GATCAATCGA TTGATCGAGA CATAGACCGC CTGGGCACCA CCTTGACTGC
-----
951  AGTTCTGAAC ACCGGCCGC AACCTGGGA GACGTCCAG GGACTTTGGG
      TCAAGACTTG TGGCCGGCG TTGGGACCT CTGCAGGTC CCTGAACCC
-----
1001 GGCCGTTTTI GTGGCCCGAC CTGAGGAAGG GAGTCGATGT GGAATCCGAC
      CCGGCAAAA CACCGGGCTG GACTCCTCC CTCAGCTACA CCTTAGGCTG
-----
1051 CCGGTCAGGA TATGTGGTTC TGGTAGGAGA CGAGAACCTA AAACAGTTCC
      GGGCAGTCCT ATACACCAAG ACCATCCTCT GCTCTTGGAT TTTGTCAAGG
-----
1101 CGCTCCGTC TGAATTTTG CTTTCGGTTT GGAACCGAAG CCGCGCGTCT
      GCGGAGGCAG ACTTAAAC GAAAGCCAA CCTTGGCTTC GGCGCGCAGA
-----
      PstI      PstI
1151 TGCTGCTGC AGCGCTGCAG CATCGTTCTG TGTGTCTCT GTCTGACTGT
      ACAGACGACG TCGCGACGTC GTAGCAAGAC ACAACAGAGA CAGACTGACA
-----

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Fig. 18-3

1201 GTTCTGTAT TTGTCTGAAA ATTAGGGCCA GACTGTACC ACTCCCTTAA  
CAAAGACATA AACAGACTTT TAATCCCGGT CTGACAAATGG TGAGGGAATT  
-----  
1251 GTTTGACCTT AGGTCACCTGG AAAGATGTCG AGCGGATCGC TCACAACCAG  
CAAACTGGAA TCCAGTGACC TTTCTACAGC TCGCCTAGCG AGTGTGTC  
-----  
----- PstI -----  
-----  
1301 TCGGTAGATG TCAAGAAGAG ACGTTGGGTT ACCTTCTGCT CTGCAGAAATG  
AGCCATCTAC AGTTCTTCTC TGCAACCCAA TGGAAGACGA GACGTCTTAC  
-----  
1351 GCCAACCTTT AACGTCGGAT GGCCGCCGAGA CGGCACCTTT AACCGAGACC  
CGGTTGGAAA TTGCAGCCTA CCGGCGTCT GCGGTGAAA TTGGCTCTGG  
-----  
1401 TCATCACCCA GGTAAAGATC AAGTCTTTT CACCTGGCCC GCATGGACAC  
AGTAGTGGT CCAATTCTAG TTCCAGAAA GTGGACCGG CGTACCTGTG  
-----  
1451 CCAGACCAGG TCCCCTACAT CGTGACCTGG GAAGCCTGG CTTTGACCC  
GGTCTGGTCC AGGGATGTA GCACTGGACC CTTCGGAACC GAAACTGGG  
-----  
1501 CCTCCCCTGG GTCAAGCCCT TTGTACACC TAAGCCTCCG CCTCCTCTTC  
GGGAGGGACC CAGTTCGGGA AACATGTGG ATTCCGAGGC GGAGGAGAAG  
-----  
1551 CTCATCCGC CCCGTCTCTC CCCCTGAAC CTCCTCGTTC GACCCGCCCT  
GAGGTAGCG GGGCAGAGAG GGGAACTTG GAGGAGCAAG CTGGGGCGGA  
-----  
1601 CGATCCTCCC TTTATCCAGC CCTCACTCT TCTTAGGCG CCGATGTTCG  
GCTAGGAGG AATAGTTCG GGAGTGAGGA AGAGATCCGC GGCCTACAGC  
-----

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1651 TGGGCCCTGG AAATGGCGGA CACCTTCCTG GACACCATGC GGGTTGGGCC  
 ACCCGGACC TTTACCGCCT GTGAAGGAC CTGTGTAGC CCCAACCCCG

1701 CAGGACGTAC GCCGACGTAC GCGATGAGAT CAATAAAGG GGGCGTGAGG  
 GTCCTGCATG CCGCTGCATG CGTACTCTA GTTATTTTCC CCCGCACTCC

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 ApaLI  
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1751 ACCGGGAGGC GGCCAGAACC GCCGTGCACG ACCCGGAGCG TCCCCTGCTG  
 TGGCCCTCCG CCGTCTTGG CGGCACGTGC TGGGCTTCC AGGGGACGAC

-----  
 XmaI  
 -----

SmaI  
 -----

AvaI  
 -----

1801 CGCTCTCCCG GGCTGCTGCC CGAAATCGCC CCCAACGCAT CCTTGGGTGT  
 GCGAGAGGGC CCGACGACGG GCCTTAGCGG GGGTTGCGTA GGAACCCACA

1851 GGCACATCGA AGAACCGGCG GGACCGTGAC CGACAGTCCC CGTAATCCCG  
 CCGTGAGCT TCTTGGCCGC CTTGGCACTG GCTGTCAGGG GCATTAGGCC

-----  
 BamHI  
 -----

AvaI  
 -----

1901 TAACCCGTTG AAATTCGTTA ACTCGAGGAT CCGGCTGTGG AATGTGTGTC  
 ATTGGGCAAC TTTAAGCAAT TGAGCTCCTA GGCCGACACC TTACACACAG

Fig. 18-5



1951 AGTAGGGTG TGGAAAGTCC CCAGGCTCCC CAGCAGGCAG AAGTATGCAA  
TCAATCCCAC ACCTTTCAGG GGTCCGAGGG GTCGTCCGTC TTCATACGTT  
-----  
2001 AGCATGCATC TCAATTAGTC AGCAACCAGG TGTGGAAGT CCCAGGGTCT  
TCGTACGTAG AGTTAATCAG TCGTTGGTCC ACACCTTCA GGGTCCGAG  
-----  
2051 CCCAGCAGGC AGAAGTATGC AAAGCATGCA TCTCAATTAG TCAGCAACCA  
GGTCTGTCCG TCTTCATACG TTTCGTACGT AGAGTTAATC AGTCGTGGT  
-----  
2101 TAGTCCCGCC CCTAACTCCG CCATCCCGC CCTAACTCC GCCAGTTCC  
ATCAGGGCGG GGATTGAGGC GGTAGGGCG GGGATTGAGG CGGTCAAGG  
-----  
2151 GCCCATCTC CGCCCCATGG CTGACTAATT TTTTATTATTT ATGCAGAGGC  
CGGGTAAGAG GCGGGGTACC GACTGATTAA AAAAATAAA TACGTCTCCG  
-----  
2201 CGAGGGCGCC TCGGCTCTG AGCTATTCCA GAAGTAGTGA GGAGGCTTTT  
GCTCCGGCGG AGCCGGAGAC TCGATAAGGT CTTCATCACT CCTCCGAAAA  
-----  
HindIII PstI  
-----  
2251 TTGGAGGCCT AGGCTTTTGC AAAAGCTTG GGCTGCAGGT CGAGCGGAT  
AACCTCCGGA TCCGAAAACG TTTTTCGAAC CCGACGTCCA GTCCTCCCTA  
-----  
2301 CTGATCAAGA GACAGGATGA GGATCGTTTC GCATGATTGA ACAAGATGGA  
GACTAGTTCT CTGTCCTACT CCTAGCAAAG CGTACTAAT TGTCTACCT  
-----

Fig. 18-6

Fig. 18-7

2351 TTGCACGCAG GTTCTCCGGC CGCTTGGGTG GAGAGGCTAT TCGGCTATGA  
AACGTGCGTC CAAGAGGCCG GCGAACCCAC CTCCTCCGATA AGCCGATACT

2401 CTGGGCACAA CAGACAATCG GTGCTCTGA TGCCGCCGTG TTCCGGCTGT  
GACCCGTGTT GTCTGTTAGC CGACGAGACT ACGGCGGCAC AAGGCCGACA

2451 CAGCGCAGGG GCGCCCGGTT CTTTGTGCA AGACCGACCT GTCCGGTGCC  
GTCGCGTCCC CGCGGGCCAA GAAAACAGT TCTGGCTGGA CAGGCCACGG

## PstI

2501 CTGAATGAAC TGCAGGACGA GGCAGGCGG CTATCGTGGC TGGCCACGAC  
GACTTACTTG ACGTCTTGCT CCGTCGCGCC GATAGCACCG ACCGGTGCTG

2551 GGGCGTTCCT TCGGCAGCTG TGCTCGACGT TGTCACTGAA GCGGGAAGGG  
CCCGCAAGGA ACGCGTCGAC ACGAGCTGCA ACAGTGACTT CGCCCTTCCC

2601 ACTGGCTGCT ATTGGGCGAA GTGCCGGGGC AGGATCTCCT GTCATCTCAC  
TGACCGACGA TAACCCGCTT CACGGCCCCG TCCTAGAGGA CAGTAGAGTG

2651 CTTGCTCCTG CCGAGAAAGT ATCCATCATG GCTGATGCAA TGCGGCGGCT  
GAACGAGGAC GGCTCTTTCA TAGGTAGTAC CGACTACGTT ACGCCGCCGA

2701 GCATACGCTT GATCCGGCTA CCTGCCCATT CGACCACCAA GCGAAACATC  
CGTATGCGAA CTAGGCCGAT GGACGGGTAA GCTGGTGTT CGCTTTGTAG

2751 GCATCGAGCG AGCAGTACT CGGATGGAAG CCGGTCTTGT CGATCAGGAT  
CGTAGCTCGC TCGTGCATGA GCCTACCTTC GGCCAGAACA GCTAGTCCTA

2801 GATCTGGACG AAGAGCATCA GGGGCTCGG CCAGCCGAAC TGTTGCCAG  
CTAGACCTGC TTCTCGTAGT CCCCAGCGC GGTCGGCTTG ACAAGCGGTC  
-----  
NcoI  
-----  
2851 GCTCAAGGCG CGCATGCCG ACGGCGAGGA TCTCGTCGTG ACCATGGCG  
CGAGTTCCGC GGTACGGC TGCCGCTCCT AGAGCAGCAC TGGGTACCGC  
-----  
2901 ATGCCTGCTT GCCGAATATC ATGGTGGAA ATGGCCGCTT TTCTGGATT  
TACGGACGAA CGGCTTATAG TACCACCTTT TACCGGCGAA AAGACCTAAG  
-----  
2951 ATCGACTGTG GCCGGCTGGG TGTGGCGGAC CGCTATCAGG ACATAGCGTT  
TAGCTGACAC CGGCCGACCC ACACCGCTG GCGATAGTCC TGTATCGCAA  
-----  
3001 GGCTACCCGT GATATTGCTG AAGAGCTTGG CGGCGAATGG GCTGACCGCT  
CCGATGGCA CTATAACGAC TTCTCGAACC GCCGCTTACC CGACTGGCGA  
-----  
3051 TCCTCGTGCT TTACGGTATC GCCGCTCCCG ATTGCGAGCG CATGCCCTTC  
AGGAGCACGA AATGCCATAG CGGCGAGGGC TAAGCGTCGC GTAGCGGAAG  
-----  
3101 TATCGCCTTC TTGACGAGTT CTTCIGAGCG GGACTCTGGG GTTCGATAAA  
ATAGCGGAAG AACTGCTCAA GAAGACTCGC CCTGAGACCC CAAGCTATTT  
-----  
3151 ATAAAAGATT TTATTTAGTC TCCAGAAAAA GGGGGAATG AAAGACCCCA  
TATTTTCTAA AATAAATCAG AGGTCCTTTT CCCCCCTTAC TTTCTGGGGT  
-----  
3201 CCTGTAGGTT TGGCAAGCTA GCTTAAGTAA CGCCATTTTG CAAGGCATGG  
GGACATCCAA ACCGTTCCGAT CGAATTCATT GCGGTAAAC GTTCCGTACC  
-----

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Fig. 18-8

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3251  AAAAATACAT AACTGAGAAT AGAGAAGTTC AGATCAAGGT CAGGAACAGA
      TTTTATATGTA TTGACTCTTA TCTCTTCAAG TCTAGTTCCA GTCCTTGTCT
-----
3301  TGGAACAGCT GAATATGGC CAAACAGGAT ATCTGTGGTA AGCAGTTCCCT
      ACCTTGTCGA CTTATACCCG GTTTGTCTTA TAGACACCAT TCGTCAAGGA
-----
3351  GCCCCGGCTC AGGGCCAAAG ACAGATGGAA CAGCTGAATA TGGGCCAAAC
      CGGGGCCGAG TCCCGGTTCT TGTCTACCTT GTCGACTTAT ACCCGGTTTG
-----
3401  AGGATATCTG TGGTAAGCAG TTCTTGCCCC GGCTCAGGGC CAAGAACAGA
      TCCTATAGAC ACCATTTCGTC AAGGACGGGG CCGAGTCCCG GTTCTTGTCT
-----
3451  TGGTCCCCAG ATGCGGTCCA GCCCTCAGCA GTTCTTAGAG AACCATCAGA
      ACCAGGGGTC TACGCCAGGT CGGGAGTCGT CAAAGATCTC TTGGTAGTCT
-----
3501  TGTTTCCAGG GTGCCCCAAG GACCTGAAT GACCCGTGTC CTTATTTGAA
      ACAAGGTCC CACGGGGTTC CTGGACTTTA CTGGACACG GAATAAACTT
-----
                                     Aval
-----
3551  CTAACCAATC AGTTCGCTTC TCGTTTCTGT TCGCGCGCTT CTGCTCCCCG
      GATTGGTTAG TCAAGCGAAG AGCGAAGACA AGCGCGGAA GACGAGGGG
-----
                                     Aval
-----
3601  AGCTCAATAA AAGAGCCAC AACCCCTCAC TCGGGGGCC AGTCCTCCGA
      TCGAGTTATT TTCTCGGGTG TTGGGGAGTG AGCCCCGGG TCAGGAGGCT
-----

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Fig. 18-9

XmaI  
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SmaI  
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AvaI

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3651 TTGACTGAGT CGCCCGGGTA CCCGTGTATC CAATAAACCC TCTTGCACTT
      AACTGACTCA GCGGGCCCAT GGGCACATAG GTTATTGGG AGAACGTCAA
-----
3701 GCATCCGACT TGTGGTCTCG CTGTTCCCTTG GGAGGGTCTC CTCTGAGTGA
      CGTAGGCTGA ACACCAGAGC GACAAGGAAC CCTCCCAGAG GAGACTCACT
-----
3751 TTGACTACCC GTCAGCGGGG GTCCTTCAIT TGGGGGCTCG TCCGGGATCG
      AACTGATGGG CAGTCGCCCC CAGAAAGTAA ACCCCCGAGC AGGCCCTAGC
-----
3801 GGAGACCCCT GCCCAGGGAC CACCGACCCA CCACGGGAG GTAAGCTGGC
      CCTCTGGGGA CGGGTCCCTG GTGGCTGGGT GGTGGCCCTC CATTGACCCG
-----
3851 TGCCTCGGC GTTTCGGTGA TGACGGTGAA AACCTCTGAC ACATGCAGCT
      ACGGAGCGCG CAAAGCCACT ACTGCCACTT TTGGAGACTG TGTACGTCGA
-----
3901 CCCGGAGACG GTCACAGCTT GTCTGTAAGC GGATGCCGGG AGCAGACAAG
      GGGCCTCTGC CAGTGTCGAA CAGACATTGG CCTACGGCCC TCGTCTGTTC
-----
3951 CCCGTCAGGG CGCGTCAGCG GGTGTTGGCG GGTGTCGGGG CGCAGCCATG
      GGGCAGTCCC GGCAGTCGC CCACAACCGC CCACAGCCCC GCGTCGGTAC
-----
4001 ACCCAGTCAC GTAGCGATAG CGGAGTGTAT ACTGGCTTAA CTATGCCGCA
      TGGGTCAGTG CATCGCTATC GCCTCACATA TGACCGAATT GATACGCCGT
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SUBSTITUTE SHEET (RULE 26)

Fig. 18-10

## ApaLI

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4051 TCAGAGCAGA TTGTACTGAG AGTGCACCAT ATGCGGTGTG AAATACCGCA
      AGTCTCGTCT AACATGACTC TCACGTGGTA TACGCCACAC TTTATGGCGT
-----
4101 CAGATGCGTA AGGAGAAAAT ACCGCATCAG GCGCTCTTCC GCTTCTCTGC
      GTCTACGCAT TCCTCTTTTA TGGCGTAGTC CGCGAGAAGG CGAAGGAGCG
-----
4151 TCACTGACTC GGTGCGCTCG GTCGTTCCGC TGGGCGGAGC GGTATCAGCT
      AGTGACTGAG CGACGCGAGC CAGCAAGCCG ACGCCGCTCG CCATAGTCGA
-----
4201 CACTCAAAGG CGGTAATACG GTTATCCACA GAATCAGGGG ATAACGCAGG
      GTGAGTTTCC GCCATTATGC CAATAGGTGT CTTAGTCCCC TATTGCGTCC
-----
4251 AAAGAACATG TGAGCAAAAG GCCAGCAAAA GGCCAGGAAC CGTAAAAAAG
      TTTCTTGTAC ACTCGTTTTC CGGTCGTTTT CCGGTCCCTG GCATTTTTC
-----
4301 CCGCGTTGCT GCGGTTTTC CATAGGCTCC GCCCCCCCTGA CGAGCATCAC
      GCGGCAACGA CCGCAAAAAG GTATCCGAGG CGGGGGGACT GCTCGTAGTG
-----
4351 AAAAATCGAC GCTCAAGTCA GAGGTGGCGA AACCCGACAG GACTATAAAG
      TTTTGTAGCTG CGAGTTCAGT CTCCACCGCT TTGGGCTGTC CTGATATTTC
-----
4401 ATACCAAGCG TTTCCCCCTG GAAGTCCCTT CGTGGCTCTT CCTGTTCGGA
      TATGGTCCGC AAAGGGGAC CTTGAGGGA GCACGCGAGA GGACAAGGCT
-----
4451 CCTGCGGCT TACCGGATAC CTGTCCGCTT TTCTCCCTTC GGAAGCGTG
      GGGACGGCGA ATGGCCTATG GACAGGCGGA AAGAGGGAAG CCTTCGCAC
-----

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SUBSTITUTE SHEET (RULE 26)

Fig. 18-11

4501 GCGTTTCTC ATAGCTCAG CTGTAAGTAT CTCAGTTCGG TGTAAGTCGT  
CGCGAAAGAG TATCGAGTGC GACATCCATA GAGTCAAGCC ACATCCAGCA  
-----  
ApalI  
-----  
4551 TCGCTCCAAG CTGGGCTGTG TGCACGAACC CCCCCTTCAG CCGACCGCT  
AGCGAGGTTT GACCCGACAC ACGTGCTTGG GGGCAAGTC GGGCTGGCGA  
-----  
4601 GCGCCTTATC CGGTAACTAT CGTCTTGAGT CCAACCCCGT AAGACACGAC  
CGCGGAATAG GCCATTGATA GCAGAACTCA GGTGGGCCA TTCTGTGCTG  
-----  
4651 TTATCGCCAC TGGCAGCAGC CACTGGTAAC AGGATTAGCA GAGCGAGGTA  
AATAGCGGTG ACCGTCGTCG GTGACCAATTG TCCTAATCGT CTCGCTCCAT  
-----  
4701 TGTAAGCGGT GCTACAGAGT TCTTGAAGTG GTGGCCTAAC TACGGCTACA  
ACATCCGCCA CGATGTCTCA AGAACTTCAC CACCGGATTG ATGCCGATGT  
-----  
4751 CTAGAAGGAC AGTATTGGT ATCTGCGTC TGCTGAAGCC AGTTACCTTC  
GATCTTCC TGATTAACCA TAGACGCGAG ACGACTTCGG TCAATGGAAG  
-----  
4801 GGAAAAAGAG TTGGTAGCTC TTGATCCGGC AAACAACCA CCGTGGTAG  
CCTTTTCTC AACCATCGAG AACTAGGCCG TTGTTTGGT GCGACCATC  
-----  
4851 CCGTGGTTTT TTGTTTGA AGCAGCAGAT TACGCGCAGA AAAAAGGAT  
GCCACCAAAA AAACAACCGT TCCTCGTCTA ATGCGCGTCT TTTTTTCTA  
-----  
4901 CTCAAGAAGA TCCTTGATC TTTTCTACGG GGTCTGACGC TCAGTGGAAC  
GAGTCTTCT AGGAAACTAG AAAAGATGCC CCAGACTGCG AGTCACCTTG  
-----

4951 GAAAACTCAC GTTAAGGGAT TTTGGTCATG AGATTATCAA AAAGGATCTT  
CTTTTGAGTG CAATTCCCTA AAACCAGTAC TCTAATAGTT TTTCCCTAGAA  
-----  
5001 CACCTAGATC CTTTTAAATT AAAAATGAAG TTTTAAATCA ATCTAAAGTA  
GTGGATCTAG GAAAATTAA TTTTACTTC AAAATTAGT TAGATTTCAT  
-----  
5051 TATATGAGTA AACTTGGTCT GACAGTTACC AATGCTTAAT CAGTGAGGCA  
ATATACTCAT TTGAACCAGA CTGTCAATGG TTACGAATTA GTCACCTCCGT  
-----  
5101 CCTATCTCAG CGATCTGTCT ATTTCTGTTCA TCCATAGTTG CCTGACTCCC  
GGATAGAGTC GCTAGACAGA TAAAGCAAGT AGGTATCAAC GGACTGAGGG  
-----  
5151 CGTCGTGTAG ATAACTACGA TACGGGAGGG CTTACCATCT GGCCCCAGTG  
GCAGCACATC TATTGATGCT ATGCCCTCCC GAATGGTAGA CCGGGGTAC  
-----  
5201 CTGCAATGAT ACCGCGAGAC CCACGCTCAC CGGCTCCAGA TTTATCAGCA  
GACGTTACTA TGGCGCTCTG GGTGCGAGTG GCCGAGGTCT AAATAGTCGT  
-----  
5251 ATAAACCAGC CAGCCGGAAG GGCCGAGCGC AGAAGTGGTC CTGCAACTTT  
TATTGGTCTG GTCGGCCTTC CCGCTCGCG TCTTACCAG GACGTTGAAA  
-----  
5301 ATCCGCCTCC ATCCAGTCTA TTAATTGTTG CCGGGAAGCT AGAGTAAGTA  
TAGCGGGAGG TAGGTCAGAT AATTAACAAC GGCCCTTCCA TCTCATTCAT  
-----  
-----  
PstI  
-----  
5351 GTTCGCCAGT TAATAGTTTG CGCAACGTTG TTGCCATTGC TGCAGGCATC  
CAAGCGGTCA ATTATCAAAC CGGTTGCAAC AACGGTAACG ACGTCCGTAG  
-----

*Fig. 18-13*



5401 GTGGTGTAC GTCGTGCTT TGGTATGGCT TCATTTCAGCT CCGTTTCCCA  
CACACACAGT CGAGCAGCAA ACCATACCGA AGTAAGTCGA GGCCAAGGGT  
-----  
5451 ACGATCAAG CGAGTTACAT GATCCCCCAT GTGTGCAAA AAAGCGGTTA  
TGCTAGTTCC GCTCAATGTA CTAGGGGGTA CAACACGTTT TTTCGGCCAAT  
-----  
5501 GCTCCTTCGG TCCTCCGATC GTGTGCAGAA GTAAGTTGGC CGCAGTGTTA  
CGAGGAAGCC AGGAGGCTAG CAACAGTCTT CATTCAACCG GCGTCACAAT  
-----  
5551 TCACTCATGG TTATGGCAGC ACTGCATAAT TCTCTTACTG TCATGCCATC  
AGTGAGTACC AATACCGTCG TGACGTATTA AGAGAAATGAC AGTACGGTAG  
-----  
5601 CGTAAGATGC TTTTCTGTGA CTGGTGAGTA CTCAACCAAG TCATTCTGAG  
GCATTCTACG AAAAGACACT GACCACTCAT GAGTTGGTTC AGTAAGACTC  
-----  
5651 AATAGTGTAT GCGGCGACCG AGTGTCTCTT GCCCGCGTC AACACGGGAT  
TTATCACATA CGCCGCTGGC TCAACGAGAA CCGGCCGCG TGTGCCCTA  
-----  
5701 AATACCGCG CACATAGCAG AACTTTAAAA GTGCTCATCA TTGGAAAACG  
TTATGGCGCG GTGTATCGTC TTGAAATTTT CACGAGTAGT AACCTTTTGC  
-----  
5751 TTCTTCGGGG CGAAAACCTT CAAGGATCTT ACCGCTGTG AGATCCAGTT  
AAGAAGCCCC GCTTTTGAGA GTTCCTAGAA TGGCGACAAC TCTAGGTCAA  
-----  
-----  
ApaLI  
-----  
5801 CGATGTAACC CACTCGTGCA CCCAACTGAT CTTCAGCATC TTTTACTTTC  
GCTACATTGG GTGAGCACGT GGGTTGACTA GAAGTCGTAG AAAATGAAAG  
-----

Fig. 18-14

5851 ACCAGCGTTT CTGGGTGAGC AAAAAACAGGA AGGCAAAATG CCGCAAAAAA  
TGGTCGCAAA GACCCACTCG TTTTGTGCTT TCCGTTTAC GCGTTTTTT  
-----  
5901 GGGAAATAGG GCGACACGGA AATGTGGAAT ACTCATACTC TTCCTTTTTT  
CCCTTATTCC CGCTGTGCTT TTACAACCTA TGAGTATGAG AAGGAAAAAG  
-----  
5951 AATATTATTG AAGCATTTAT CAGGGTTATT GTCTCATGAG CGGATACATA  
TTATAATAAC TTCGTAAATA GTCCCAATAA CAGAGTACTC GCCTATGTAT  
-----  
6001 TTTGAATGTA TTTAGAAAAA TAAACAAATA GGGTTCCGC GCACATTTCC  
AAACTTACAT AATCTTTTTT ATTGTTTAT CCCCAAGGCG CGTGTAAGG  
-----  
6051 CCGAAAAGTG CCACCTGACG TCTAAGAAAC CATATTATC ATGACATTAA  
GGCTTTTCAC GGTGGACTGC AGATTCTTTG GTAATAATAG TACTGTAATT  
-----  
6101 CCTATAAAAA TAGGCGTATC ACGAGGCCCT TTCGTCTTCA A  
GGATATTTTT ATCCGCATAG TGCTCCGGA AAGCAGAAGT T  
-----

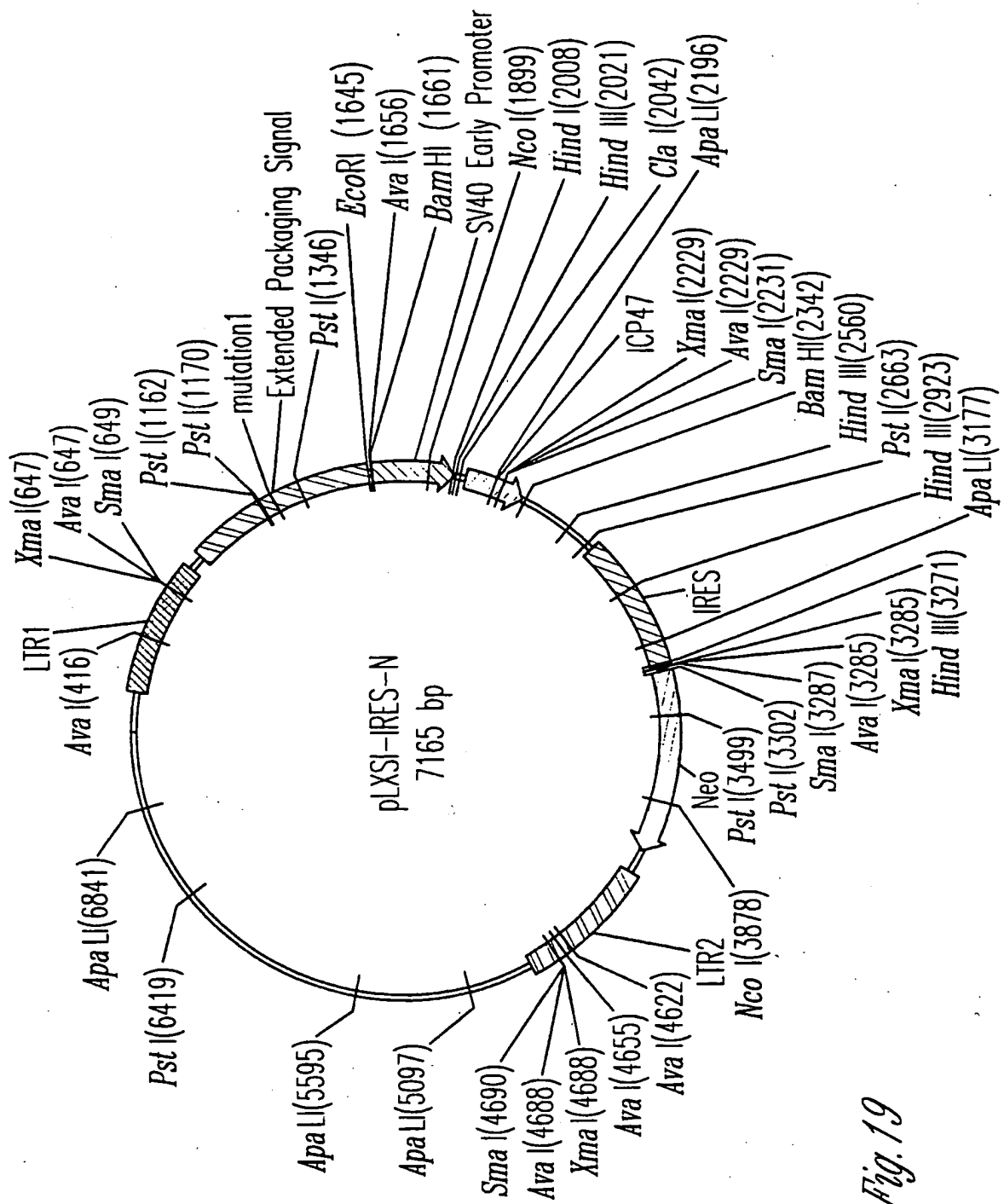


Fig. 19

1 GAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG CAATTGCTAG  
 CTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC GTTAACGATC  
 -----  
 51 AAAACTGTCC TCCAAATGTG TCCCCCTCAC ACTCCCAAAT TCGCGGGCTT  
 TTTTGACAGG AGGTTTACAC AGGGGAGTG TGAGGGTTTA AGCGCCCGAA  
 -----  
 101 CTGCCCTCTTA GACCACTCTA CCTATTCCC CACACTCAC GGAGCCAAAG  
 GACGGAGAAT CTGGTGAGAT GGGATAAGG GTGTGAGTGG CCTCGGTTTC  
 -----  
 151 CCGCGGCCCT TCCGTTTCTT TGCCTTTGAA AGACCCACAC CGTAGGTGGC  
 GCGCCCGGA AGGCAAGAA ACGAAACTT TCTGGGGTGG GCATCCACCG  
 -----  
 201 AAGCTAGCTT AAGTAACGCC ACTTTGCAAG GCATGGAAAA ATACATAACT  
 TTCGATCGAA TTCAATTGCGG TGAAACGTTT CGTACCTTTT TATGTATTGA  
 -----  
 251 GAGAATAGAA AAGTTCAGAT CAAGGTCAGG AACAAAGAAA CAGCTGAATA  
 CTCCTATCTT TTCAAAGTCTA GTTCCAGTCC TTGTTTCTTT GTCGACTTAT  
 -----  
 301 CCAAAACAGGA TATCTGTGGT AAGCGGTTC TGCCCGGCT CAGGGCCAAG  
 GGTTCGTCTT ATAGACACCA TTCGCCAAGG ACGGGCCGA GTCCCGGTTT  
 -----  
 351 AACAGATGAG ACAGCTGAGT GATGGGCCAA ACAGGATATC TGTGTAAGC  
 TTGTCTACTC TGTCGACTCA CTACCCGGTT TGTCCTATAG ACACCATTCG  
 -----  
 Aval  
 -----  
 401 AGTTCCTGCC CCGGCTCGGG GCCAAGAACA GATGTCCTCC AGATCGGGT  
 TCAAGGACCG GGCCGAGCCC CGGTTCTTGT CTACCAGGGG TCTACGCCAG  
 -----

451 CAGCCCTCAG CAGTTTCTAG TGAATCATCA GATGTTTCCA GGGTGCCCCA  
GTCGGGAGTC GTCAAAGATC ACTTAGTAGT CTACAAAGGT CCCACGGGGT

501 AGGACCTGAA AATGACCCCTG TACCTTATT GAACTAACCA ATCAGTTTCG  
TCCTGGACTT TTA CTGGGAC ATGGAATAA CTTGATTGGT TAGTCAAGCG

551 TTCTCGCTTC TGTTCCGCGG CTTCCGCTCT CCGAGCTCAA TAAAGAGGCC  
AAGAGCGAAG ACAAGCGCGC GAAGGCGAGA GGCTCGAGTT ATTTTCTCGG

XmaI

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SmaI

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AvaI

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601 CACAACCCCT CACTCGGCGC GCCAGTCTTC CGATAGACTG CGTCGCCCGG  
GTGTTGGGGA GTGAGCCCGC CGGTCAGAA GCTATCTGAC GCAGCGGGCC

XmaI

~

SmaI

~

AvaI

651 GTACCCCGTAT TCCCAATAAA GCCTCTTGCT GTTTGCATCC GAATCGTGGT  
CATGGGCATA AGGGTTATTT CGGAGAACGA CAAACGTAGG CTTAGCACCA

701 CTCGCTGTTT CTTGGGAGGG TCTCCTCTGA GTGATTGACT ACCCAGCAGC  
GAGCGACAAG GAACCTCTCC AGAGGAGACT CACTAACTGA TGGGTGCTGC

Fig. 20-2

```

751 GGGGTCTTTC ATTTGGGGGC TCGTCCGGGA TTTGGAGACC CCTGCCCAGG
    CCCCAGAAAG TAAACCCCGG AGCAGGCCCT AAACCTCTGG GGACGGGTCC
-----
801 GACCACCGAC CCACCACCGG GAGTAAGCT GGCCAGCAAC TTATCTGTGT
    CTGGTGGCTG GGTGGTGGCC CTCATTCGA CCGTTCGTG AATAGACACA
-----
851 CTGTCCGATT GTCTAGTGTG TATGTTTGAT GTTATGCGCC TGCCTCTGTA
    GACAGGCTAA CAGATCACAG ATACAAACTA CAATACGCGG ACGCAGACAT
-----
901 CTAGTTAGCT AACTAGCTCT GTATCTGGCG GACCCGTGGT GGAATCGACG
    GATCAATCGA TTGATCGAGA CATAGACCGC CTGGGCACCA CCTTGACTGC
-----
951 AGTTCCTGAAC ACCCGGCCGC AACCTGGGA GACGTCCAG GGACTTTGGG
    TCAAGACTTG TGGCCCGCG TTTGGACCCT CTGCAGSGTC CCTGAAACCC
-----
1001 GGCCGTTTTT GTGGCCCGAC CTGAGGAAGG GAGTCGATGT GGAATCCGAC
    CCGGCAAAA CACCGGGCTG GACTCCTTCC CTCAGCTACA CCTTAGGCTG
-----
1051 CCCGTCAGGA TATGTGGTTC TGGTAGGAGA CGAGAACCTA AACAGTTCC
    GGCAGTCCT ATACACCAAG ACCATCCTCT GCTCTTGGAT TTTGTCAAGG
-----
1101 CGCCTCCGTC TGAATTTTIG CTTTCGGTTT GGAACCGAAG CCGCGCGTCT
    GCGGAGGCAG ACTTAAAAAC GAAAGCCAA CTTGGCTTC GGCGCGCAGA
-----
                                PstI      PstI
1151 TGTCTGCTGC AGCGCTGCAG CATCGTCTG TGTGTCTCT GTCTGACTGT
    ACAGACGACG TCGCGACGTC GTAGCAAGAC ACAACAGAGA CAGACTGACA
-----

```

Fig. 20-3

1201 GTTCTGTAT TTGTCTGAAA ATTAGGGCCA GACTGTTACC ACTCCCTTAA  
CAAAGACATA AACAGACTTT TAATCCCGGT CTGACAATGG TGAGGGAATT  
-----  
1251 GTTTGACCTT AGGTCACTGG AAAGATGTGG AGCGATCGC TCACAACCCAG  
CAAACCTGGAA TCCAGTGACC TTCTACAGC TCGCCTAGCG AGTGTGGTC  
-----  
PstI  
-----  
1301 TCGGTAGATG TCAAGAAGAG ACGTTGGGT ACCTTCTGCT CTGCAGAATG  
AGCCATCTAC AGTTCTTCTC TGCAACCCAA TGGAAGACGA GACGTCTTAC  
-----  
1351 GCCAACCTTT AACGTCGGAT GCGCGCGAGA CCGCACCTTT AACCGAGACC  
CGGTTGGAAA TTGCAGCCTA CCGGCGCTCT GCCGTGGAAA TTGGCTCTGG  
-----  
1401 TCATCACCCA GGTTAAGATC AAGTCTTTT CACCTGGCCC GCATGGACAC  
AGTAGTGGGT CCAATTCTAG TTCCAGAAAA GTGGACCGGG CGTACCTGTG  
-----  
1451 CCAGACCAGG TCCCCTACAT CGTGACCTGG GAAGCCTTGG CTTTGGACCC  
GGTCTGGTCC AGGGATGTA GCACTGGACC CTTCGGAACC GAAACTGGG  
-----  
1501 CCTCCCTGG GTCAAGCCCT TTGTACACCC TAAGCCTCCG CCTCCTCTTC  
GGGAGGGACC CAGTTCGGGA AACATGTGG ATTCTGGAGC GGAGGAGAAG  
-----  
1551 CTCCATCCGC CCCGTCTCTC CCCCTTGAAC CTCCTCGTTC GACCCCGCCT  
GAGGTAGGCG GGGCAGAGAG GGGGAACCTG GAGGAGCAAG CTGGGGCGGA  
-----

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Fig. 20-4

NOT FURNISHED AT TIME OF PUBLICATION



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1951  CTGAGCTATT CCAGAAGTAG TGAGGAGGCT TTTTGGAGG CCTAGGCTTT
      GACTCGATAA GGTCTTCATC ACTCCTCCGA AAAAACCTCC GGATCCGAAA
-----
      HindIII      HindIII      ClaI
      ~~~~~      ~~~~~      ~~~~~
2001  TGC AAAAGC TTGGGCTGCA AGCTTGATC CGAGCTCGGA TCGATATCTG
      ACGTTTTCG AACCCGACGT TCGAACCATG GCTCGAGCCT AGCTATAGAC
-----
2051  CGGCCGCGTC GACGGATGTC GTGGGCCCTG GAAATGGCGG ACACCTTCCT
      GCCGGGCGAG CTGCCTACAG CACCCGGGAC CTTTACCGCC TGTGGAAGGA
-----
2101  GGACACCATG CGGGTTGGG CCAGGACGTA CGCCGACGTA CGCGATGAGA
      CCTGTGGTAC GCCCAACCCG GTCCCTGCAT GCGGCTGCAT GCGCTACTCT
-----
      ApaLI
      ~~~~~
2151  TCAATAAAAG GGGGCGTGAG GACCGGGAGG CGGCCAGAAC CGCCGTGCAC
      AGTTATTTTC CCCCCTACTC CTGGCCCTCC GCCGGTCTTG GCGGCACGTG
-----
      XmaI
      ~~~~~
      SmaI
      ~~~~~
      Aval
      ~~~~~
2201  GACCCGGAGC GTCCCCTGCT GCGCTCTCCC GGGCTGCTGC CCGAAATCGC
      CTGGGCCTCG CAGGGGACGA CGCGAGAGGG CCCGACGACG GGCTTTAGCG
-----

```

Fig. 20-6

2251 CCCAACGCA TCCTTGGGTG TGGACATCG AAGAACCGGC GGGACCGTGA  
GGGTTGCGT AGGAACCCAC ACCGTGTAGC TTCTTGGCCG CCCTGGCACT

BamHI

2301 CCGACAGTCC CCGTAATCCG GTAACCCGTT GAAATTCAGT GGATCCACTA  
GGCTGTCAGG GGCATTAGGC CATTTGGGCAA CTTTAAGTCA CCTAGGTGAT

2351 GTAACGGCCG CCAAGTGTGCT GGAATTAAAT CGCTGTCTGC GAGGGCCCGC  
CATTTCCCGC GGTACACGGA CCTTAATTAA GCGACAGACG CTCCCGGCCG

2401 TGTGCGGTG AGTACTCCCT CTCAAAAGCG GGCATGACTT CTGCGCTAAG  
ACAACCCAC TCATGAGGGA GAGTTTTCGC CCGTACTGAA GACGCGATTTC

2451 ATTGTCAAGT TCCAAAACG AGGAGGATTT GATATTCACC TGGCCCGCGG  
TAACAGTCAA AGGTTTTCGC TCCTCCTAAA CTATAAGTGG ACCGGCGGCC

2501 TGATGCCCTT GAGGTGGCC GCGTCCATCT GGTCAAGAAA GACAATCTTT  
ACTACGGAAA CTCCACCCGG CGCAGGTAGA CCAGTCTTTT CTGTTAGAAA

HindIII

2551 TTGTTGTCAA GCTTGAGGTG TGGCAGGCTT GAGATCTGGC CATACTTG  
AACAACAGTT CGAACTCCAC ACCGTCCGAA CTCTAGACCG GTATGTGAAC

2601 AGTGACAAATG ACATCCACTT TGCCTTCTC TCCACAGGTG TCCACTCCCA  
TCACGTGTAC TGTAGGTGAA ACGGAAAGAG AGGTGTCCAC AGGTGAGGCT

PstI

2651 GGTCCAACCTG CAGGTGATC GAGCATGCAT CTAGGGCGGC CAATTCGCC  
CCAGGTTGAC GTCCAGCTAG CTCGTACGTA GATCCCGCCG GTTAAGCGGG

2701 CTCCTCCCTCC CCCCCCCTA ACGTTACTGG CCGAAGCCGC TTGGAATAAG  
GAGAGGGAGG GGGGGGGGAT TGCAATGACC GGCTTCGGCG AACCTTATTC

2751 GCCGGTGTGT GTTGTCTAT ATGTGATTTT CCACCATATT GCCGTCTTTT  
CGGCCACACA CAAACAGATA TACACTAAAA GGTGGTATAA CGGCAGAAAA

2801 GGCAATGTGA GGGCCCGGAA ACCTGGCCCT GTCTTCTTGA CGAGCATTC  
CCGTTACTACT CCGGGCCCTT TGGACCGGGA CAGAAGAACT GCTCGTAAGG

2851 TAGGGGTCTT TCCCTCTCTG CCAAAGGAAT GCAAGGTCTG TTGAATGTGG  
ATCCCCAGAA AGGGGAGAGC GGTTCCTTGA CGTCCAGAC AACTTACAGC

HindIII

2901 TGAAGGAAGC AGTTCCTCTG GAAGCTTCTT GAAGACAAAC AACGTCTGTA  
ACTTCCTTCG TCAAGGAGAC CTTCGAAGAA CTTCTGTTTG TTGCAGACAT

2951 GCGACCCCTT GCAGGCAGCG GAACCCCCCA CCTGGCGACA GGTGCCTCTG  
CGCTGGGAAA CGTCCGTCGC CTTGGGGGGT GGACCGCTGT CCACGGAGAC

3001 CGGCCAAAAG CCACGTGTAT AAGATACACC TGCAAGGCG GCACAAACCC  
GCCGGTTTTC GGTGCACATA TTCTATGTGG ACGTTCCGC CGTGTGGGG

3051 AGTGCCACGT TGTAGTTGG ATAGTTGTGG AAAGAGTCAA ATGGCTCTCC  
TCACGGTGCA AACTCAACC TATCAACACC TTTCTCAGTT TACCGAGAGG

Fig. 20-8

```

3101 TCAAGCGTAG TCAACAAGGG GCTGAAGGAT GCCAGAAGG TACCCATTG
      AGTTCGCATC AGTTGTTCCC CGACTTCCTA CCGGTCTTCC ATGGGGTAAC
      -----
                        ApaLI
                        ~~~~~
3151 TATGGGAATC TGATCTGGG CCTCGGTGCA CATGCTTTAC ATGTGTTTAG
      ATACCCTTAG ACTAGACCCC GGAGCCACGT GTACGAAATG TACACAAATC
      -----
3201 TCGAGGTTAA AAAAGCTCTA GGCCCCCGA ACCACGGGA CGTGGTTTTC
      AGTCCAATT TTTTCGAGAT CCGGGGGCT TGGTGCCCT GCACCAAAAG
      -----
                        XmaI
                        ~~~~~
                        SmaI
                        ~~~~~
                        Aval
                        ~~~~~
3251 CTTTGAAAAA CACGATGATA AGCTTGCCAC AACCCCGGA TAATTCCTGC
      GAAACTTTTT GTGCTACTAT TCGAACGGTG TTGGGGCCCT ATTAAGGACG
      -----
                        HindIII
                        ~~~~~
                        PstI
                        ~~~~~
3301 AGCCAATATG GGATCGGCCA TTGAACAAGA TGGATTGCAC GCAGGTTCTC
      TCGGTTATAC CCTAGCCGT AACTTGTTCT ACCTAACGTG CGTCCAAGAG
      -----
3351 CGCCCGCTTG GGTGGAGAG CTATTGGCT ATGACTGGG ACAACAGACA
      GCCGGCGAAC CCACCTCTCC GATAAGCCGA TACTGACCCG TGTGTCTGT
      -----
3401 ATCGGCTGCT CTGATGCCG CGTGTTCGG CTGTCAGCG AGGGGCGCC
      TAGCCGACGA GACTACGGC GCACAAGCC GACAGTCGG TCCCCGCGG
      -----

```

Fig. 20-9

## Pst I

~~~~~  
3451 GGTTCCTTTT GTCAAGACCG ACCTGTCCGG TGCCCTGAAT GAACTGCAGG  
CCAAGAAAAA CAGTCTGGC TGGACAGGCC ACGGACTTA CTTGACGTCC  
-----  
3501 ACGAGGCAGC GCGGCTATCG TGGCTGGCCA CGACGGCGT TCCTTGCGCA  
TGCTCCGTCG CGCCGATAGC ACCGACCGT GCTGCCCGCA AGGAACGCGT  
-----  
3551 GCTGTGCTCG ACGTTGTAC TGAAGCGGA AGGACTGGC TGCTATTGGG  
CGACACGAGC TGCAACAGTG ACTTCGCCCT TCCCTGACCG ACGATAACCC  
-----  
3601 CGAAGTGCCG GGGCAGGATC TCCTGTATC TCACCTTGCT CCTGCCGAGA  
GCTTCACGGC CCCGTCCTAG AGGACAGTAG AGTGGAAACGA GGACGGCTCT  
-----  
3651 AAGTATCCAT CATGGCTGAT GCAATGCGGC GGCTGCATAC GCTTGATCCG  
TTCATAGGTA GTACCGACTA CGTTACGCCG CCGACGTATG CGAACTAGGC  
-----  
3701 GCTACCTGCC CATTGACCA CCAAGCGAA CATCGCATCG AGCGAGCACG  
CGATGGACGG GTAAGCTGGT GGTTGCTTT GTAGCGTAGC TCGCTCGTGC  
-----  
3751 TACTCGGATG GAAGCCGGTC TTGTCGATCA GGATGATCTG GACGAAGAGC  
ATGAGCCTAC CTTCCGGCCAG AACAGTAGT CCTACTAGAC CTGCTTCTCG  
-----  
3801 ATCAGGGGCT CGCGCCAGCC GAACTGTTCTG CCAGGCTCAA GGCGCGCATG  
TAGTCCCCGA GCGCGGTCCG CTTGACAAGC GTCCCGAGTT CCGCGCGTAC  
-----

## NcoI

3851 CCCGACGGCG AGGATCTCGT CGTGACCCAT GCGATGCCT GCTTGCCGAA  
GGGCTGCCGC TCCTAGAGCA GCACTGGTA CCGCTACGGA CGAACGGCTT  
-----  
3901 TATCATGGTG GAAATGGCC GCTTTCTGG ATTCAATGAC TGTGGCCGGC  
ATAGTACCAC CTTTACCAG CGAAAGACC TAAGTAGCTG ACACCGGCCG  
-----  
3951 TGGGTGTGGC GGACCGCTAT CAGGACATAG CGTTGGCTAC CCGTGATATT  
ACCCACACCG CCTGGCGATA GTCCTGTATC GCAACCGATG GGCATATATA  
-----  
4001 GCTGAAGAGC TTGGCGGCGA ATGGGCTGAC CGTTCCCTCG TGCTTTACGG  
CGACTTCTCG AACCGCCGCT TACCCGACTG GCGAAGGAGC ACGAAATGCC  
-----  
4051 TATGCCCGCT CCCGATTTCG AGCGCATCGC CTTCTATCGC CTTCTTGACG  
ATAGCGGCGA GGGCTAAGCG TCGCGTAGCG GAAAGATAGCG GAAGAACTGC  
-----  
4101 AGTTCTGGTC GAGGCGGATC TGATCAAGAG ACAGGATGAG GATCGTTTCG  
TCAAGACCAG CTCGCGCCTAG ACTAGTTCTC TGTCCTACTC CTAGCAAAGC  
-----  
4151 CGCGGGACTC TGGGGTTTGA TAAATATAAA GATTTTATTT AGTCTCCAGA  
GCGCCCTGAG ACCCCAAGCT ATTTTATTTT CTAAATAATA TCAGAGGTCT  
-----  
4201 AAAAGGGGG AATGAAAGAC CCCACCTGTA GGTTCGGCAA GCTAGCTTAA  
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4251 GTAACGCCAT TTTGCAAGGC ATGGAATAAT ACATAACTGA GAATAGAGAA  
CATTGCGGTA AAACGTTCCG TACCTTTTTA TGTATTGACT CTTATCTCTT  
-----

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Fig. 20-11

```
4301 GTTCAGATCA AGTCAGGAA CAGATGGAAC AGCTGAATAT GGGCCAAACA
    CAAGTCTAGT TCCAGTCCTT GTCTACCTTG TCGACTTATA CCCGGTTTGT
-----
4351 GGATATCTGT GGTAAAGCAGT TCCTGCCCCG GCTCAGGGCC AAGAACAGAT
    CCTATAGACA CCATTGCTCA AGGACGGGGC CGAGTCCCGG TTCTTGTCTA
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4401 GGAACAGCTG AATATGGCC AAACAGGATA TCTGTGGTAA GCAGTTCCTG
    CCTTGTCGAC TTATACCCGG TTGTCTCTAT AGACACCATT CGTCAAGGAC
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4451 CCCCGGCTCA GGGCCAAGAA CAGATGGTCC CCAGATGCCG TCCAGCCCCTC
    GGGGCCGAGT CCCGGTCTT GTCTACCAGG GGTCTACGCC AGTCCGGGAG
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4501 AGCAGTTTCT AGAGAACCAT CAGATGTTTC CAGGGTGCCC CAAGGACCTG
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-----
4551 AAATGACCCCT GTGCCCTTATT TGAACATAACC AATCAGTTG CTTCTCGCTT
    TTTACTGGGA CACGGAATAA ACTTGATTGG TTAGTCAAGC GAAGAGCGAA
-----
                                Aval
-----
4601 CTGTTGCGGC GCTTCTGCTC CCCGAGCTCA ATAAAGAGC CCACAACCCC
    GACAAAGCGCG CGAAGACGAG GGGCTCGAGT TATTTTCTCG GGTGTTGGGG
-----
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Fig. 20-12

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XmaI
~~~~~
SmaI
~~~~~
AvaI
~~~~~
AvaI
~~~~~
4651 TCACTCGGG CGCCAGTCCT CCGATTGACT GAGTCGCCG GGTACCCGTG
AGTGAGCCCC GCGGTCAGGA GGCTAACTGA CTCAGCGGGC CCATGGGCAC
-----
4701 TATCCAATAA ACCCTCTTGC AGTTGCATCC GACTTGTGGT CTCGCTGTTT
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-----
4751 CTTTGGGAGG TCTCCTCTGA GTGATTGACT ACCCGTCAGC GGGGTCCTTT
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4801 CATTGGGGG CTCGTCCGGG ATCGGGAGAC CCCTGCCCCAG GGACCACCGA
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-----
4851 CCCACCACCG GGAGGTAAGC TGGCTGCCTC GCGCGTTTCG GTGATGACGG
GGTGGTGGC COTCCATTTC ACCGACGGAG CCGGCAAAGC CACTACTGCC
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4901 TGAAACCTC TGACACATGC AGCTCCCGGA GACGGTCACA GCTTGTCTGT
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-----
4951 AAGCGGATGC CGGAGCAGA CAAGCCCGTC AGGCGCGTC AGCGGTGTT
TTCGCCTACG GCCCTCGTCT GTTCGGGCAG TCCCGCGCAG TCGCCACAA
-----
5001 GGCGGTGTC GGGGCGCAGC CATGACCCAG TCACGTAGCG ATAGCGGAGT
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ApalI  
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5051 GTATACTGGC TTAACATATGC GGCATCAGAG CAGATTGTAC TGAGAGTGCA  
CATATGACCG AATTGATACG CCGTAGTCTC GTCTAACATG ACTCTCACGT

ApalI

5101 CCATATGCGG TGTGAAATAC CGCACAGATG CGTAAGGAGA AAATACCGCA  
GGTATACGCC ACACTTTATG GCGTGTCTAC GCATTCTCTT TTTATGGCGT

5151 TCAGGCGCTC TTCCGCTTCC TCGCTCACTG ACTCGCTGCG CTCGGTCTGT  
AGTCCGCGAG AAGCGAAGG AGCGAGTGAC TGAGCGACGC GAGCCAGCAA

5201 CGGTGCGGC GAGCGGTATC AGCTCACTCA AAGCGGTAA TACGGTTATC  
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5251 CACAGAAATCA GGGATAACG CAGGAAAGAA CATGTGAGCA AAAGGCCAGC  
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5301 AAAAGGCCAG GAACCGTAA AAGCGCGGT TGCTGGCGTT TTTCCATAGG  
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5351 CTCGCCCCC CTGACGAGCA TCACAAAAT CGACGCTCAA GTCAGAGGTG  
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5401 GCGAAACCCG ACAGGACTAT AAAGATACCA GCGTTTCCC CCTGGAAGCT  
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Fig. 20-14

5451 CCCTCGTGCG CTCTCCTGTT CCGACCCCTGC CGCTTACCGG ATACCTGTCC  
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ApaLI

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Fig. 20-16

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6251 TCACCGGCTC CAGATTATTATC AGCAATAAAC CAGCCAGCCG GAAGGGCCGA  
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PstI  
-----  
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-----  
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## ApaLI

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Fig. 20-18

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<151> 1998-01-14

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 99/00733

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/86 C12N15/34 C12N15/38 C12N5/10 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 15384 A (JOHNSON DAVID C ;YORK IAN A (CA)) 8 June 1995 see page 11, line 20 - page 17, line 27 see page 30, line 22 - page 31, line 9 see page 49, line 7 - page 51, line 3 ---	1-25
X	WO 96 04383 A (CAMPBELL ANN E ;AMERICAN CYANAMID CO (US)) 15 February 1996 see page 8, line 16 - page 14, column 15 --- -/--	1-25

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

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Date of the actual completion of the international search

23 June 1999

Date of mailing of the international search report

06/07/1999

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/00733

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BRUDER J T ET AL: "Expression of gp19K increases the persistence of transgene expression from an adenovirus vector in the mouse lung and liver." JOURNAL OF VIROLOGY, (1997 OCT) 71 (10) 7623-8. JOURNAL CODE: KCV. ISSN: 0022-538X., XP002106932 United States see the whole document ----	1-20, 22, 23
X	MARCONI, PEGGY ET AL: "Replication-defective herpes simplex virus vectors for gene transfer in vivo" PROC. NATL. ACAD. SCI. U. S. A. (1996), 93(21), 11319-11320 CODEN: PNASA6; ISSN: 0027-8424, XP002106933 see the whole document ----	1-25
X	WO 96 31241 A (CELL GENESYS INC ;OTTEN GILLIS R (US)) 10 October 1996 see page 4, line 3 - page 11, line 19 ----	1-25
X	YORK ET AL: "A CYTOSOLIC HERPES SIMPLEX VIRUS PROTEIN INHIBITS ANTIGEN PRESENTATION TO CD8+ T LYMPHOCYTES" CELL, vol. 77, 1994, pages 525-535, XP002106934 cited in the application see page 525 see page 529, paragraph 2 - paragraph 4 see abstract ----	1-25
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A	SHULL ET AL: "HUMORAL IMMUNE RESPONSE LIMITS GENE THERAPY IN CANINE MPS I" BLOOD, vol. 88, 1996, pages 377-379, XP002106936 cited in the application see the whole document -----	

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Information on patent family members

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PCT/US 99/00733

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